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# INVESTIGATION OF A 1500 FT/SEC, TRANSONIC, HIGH THROUGH-FLOW, SINGLE-STAGE AXIAL-FLOW COMPRESSOR WITH LOW HUB/TIP RATIO

COMPONENTS BRANCH  
TURBINE ENGINE DIVISION

OCTOBER 1976

TECHNICAL REPORT AFAPL-TR-76-92  
FINAL REPORT FOR PERIOD 1 OCTOBER 1976 - 1 MARCH 1976

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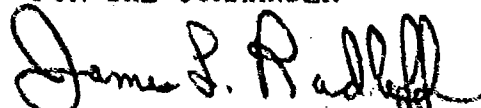
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This technical report has been reviewed and is approved for publication.

  
ARTHUR J. WENNERSTROM, GS-15  
Chief, Compressor Research Group

FOR THE COMMANDER

  
JAMES L. RADLOFF, Major, USAF  
Chief, Components Branch

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER (14) AFAPL-TR-76- 92	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) INVESTIGATION OF A 1500 FT/SEC, TRANSONIC, HIGH-THROUGH-FLOW, SINGLE STAGE AXIAL FLOW COMPRESSOR WITH LOW HUB/TIP RATIO.		5. TYPE OF REPORT & PERIOD COVERED Tech. Report (Final) 1 Oct. 75 - 1 Mar. 76
6. AUTHOR(s) Arthur J./Wennerstrom, ↓ Robert D./Derose C. Herbert/Law, William A./Buzzell		6. PERFORMING ORG. REPORT NUMBER
7. PERFORMING ORGANIZATION NAME AND ADDRESS Air Force Aero Propulsion Lab/TB Wright-Patterson AFB, Ohio 45433		8. CONTRACT OR GRANT NUMBER(s) (12) 388p.
11. CONTROLLING OFFICE NAME AND ADDRESS Components Branch, Turbine Engine Division Air Force Aero Propulsion Laboratory Wright Patterson AFB, Ohio 45433		9. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS (16) Project 7465 61128F Task 13 Work Unit 27 (17) 13
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Final technical rept. 1 Oct 75 - 1 Mar 76		10. REPORT DATE October 1976
15. SECURITY CLASS. (of this report) Unclassified		10. NUMBER OF PAGES 372
16. DISTRIBUTION STATEMENT (of this Report) Distribution limited to U.S. Government agencies only: Test and Evaluation; October 1976. Other requests for this document must be referred to AF Aero Propulsion Laboratory (AFAPL/TBC), WPAFB, Ohio 45433.		15. DECLASSIFICATION/DOWNGRADING SCHEDULE
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Axial Compressor Gas Turbine Aircraft Turbine Engine FT SQUARE		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Complete experimental results are presented from tests of an axial compressor stage designed for a flow per frontal area of 39.7 lb/sec/ft <sup>2</sup> , a total pressure ratio of 1.912 and a tip speed of 1500 ft/sec. The performance objectives of this stage were derived from a preliminary design study of a multi-stage compressor for an advanced turbojet engine. Since the most serious aerodynamic design problems of the over-all compressor		

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were observed to be associated with the first stage, this stage was chosen as the subject of a research program. Results of the tests indicated that, at design speed, design flow was achieved with a rotor isentropic efficiency of 90.4 percent, a stage isentropic efficiency of 88.2 percent and a stage total pressure ratio of 2.065.

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## FOREWORD

This report describes the experimental investigation of a transonic axial-flow compressor inlet stage. The work was performed in the Turbine Engine Division of the Air Force Aero-Propulsion Laboratory, Air Force Systems Command, Wright-Patterson AFB, Ohio. It was accomplished under Project 7065, Task 13, Work Unit 27. The effort was conducted by Dr. Arthur J. Wennerstrom, Dr. C. Herbert Law, and 1 Lt. William A. Buzzell of AFAPL/TBC, and Mr. Robert D. DeRose of Systems Research Laboratories, Inc., Dayton, Ohio, during the period October 1975 to March 1976.



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## SECTION I

### INTRODUCTION

This report presents the results of an experimental evaluation of the single-stage axial compressor described in detail in Reference 1. Performance objectives for the experimental stage were:

Flow per Frontal Area: 39.7 lb/sec/ft<sup>2</sup>  
Rotor Tip Speed: 1500 ft/sec (standard conditions)  
Rotor Total Pressure Ratio: 1.966  
Stage Total Pressure Ratio: 1.912  
Rotor Isentropic Efficiency: 86.9%  
Stage Isentropic Efficiency: 83.0%

The performance goals of this stage were based on a preliminary design study of a multi-stage compressor for an advanced turbojet engine. Since the most serious aerodynamic design problems of the overall compressor were observed to be associated with the first stage, it was chosen as the subject of an experimental research program.

The results of the tests, reported herein, indicate that all of the rotor and stage design goals were achieved or exceeded. Part-speed rotor and stage isentropic efficiency, especially between 75 to 95% design speed, was exceptional for the test stage.

The second section of this report describes the test facility flow path, the compressor test vehicle, and the complete instrumentation system, including both compressor and facility instrumentation. The procedures used in taking test data and a description of the complete data analysis program are detailed in Section III. The results of the test, including design point comparisons, are given in Section IV. Section V, the last section, summarizes the conclusions drawn from the data. Appendix A includes the complete computer listing of the aerodynamic thru-blade analysis for the test point which most closely matched design point conditions. Appendix B contains the input data used in the across-blade aerodynamic analysis for each data point recorded during the test.

*Appendix B provides sufficient data such that any reader wishing to process any data point not fully presented in the report, or wishing to process any data point differently, can, with the aid of Reference 6, completely reprocess the data or adapt the data to his own data reduction scheme.*



## SECTION II

### TEST APPARATUS

#### 1. FACILITY FLOW PATH

The test facility used is of the open-loop variety. It is shown schematically in Figure 1. Air enters the facility through a filter designed to remove five micron particles with a 99.5 percent efficiency. The air then passed through a 30-inch duct to a Universal Venturi Tube located about six pipe diameters downstream. Two pipe diameters further downstream, the air is turned 90 degrees with the aid of turning vanes. Screens are installed perpendicular to the pipe axis just before the elbow, and in the trailing edge plane of the turning vanes to prevent feedback related to flow separation on the turning vanes from reaching the venturi. Following the elbow, the flow passes through a tube bundle and subsequently enters a 48-inch diameter settling chamber. The settling chamber contains a perforated conical flow spreader and two screens patterned after the model investigated in Reference 2. From the settling chamber, air enters the compressor through a direct-coupled bellmouth. Air leaving the compressor is deflected radially outward to a peripheral throttle. The throttle consists of one stationary and one rotating cylindrical ring, each with 16 circumferentially distributed matching holes. Throttling takes place at a diameter of approximately 47 inches. The throttle is designed to vary from fully open to fully closed in 200 equal area increments. Downstream of the throttle, the flow enters a collector, from which it is passed through a 24-inch diameter duct to a silencer, and back to the atmosphere. A fast-acting poppet type valve, bypassing the throttle valve, provides a 20% increase in total throttle area to relieve compressor surge conditions on manual command. A cutaway drawing is shown in Figure 2. The perforated plate indicated just upstream of the tube bundle in Figure 1 was removed for this test to decrease the pressure drop through the facility.

#### 2. COMPRESSOR TEST VEHICLE

A cross-section of the research compressor is shown in Figure 3. The design employs a cantilevered rotor supported by four 0.5 inch thick bearing support struts with leading edges located about two stator chord lengths downstream of the stator trailing edge plane. The rotor tip diameter is nominally 17 inches. Oil seals are controlled gap carbon seals with an air barrier. No oil leakage into the flow path has ever been experienced. Cold rotor radial tip clearance with the rotor at rest is 0.024 to 0.026 inches. Hot



clearance at design speed is predicted to be approximately 0.012 inches or about 0.3 percent of the rotor tip chord. The rotor shaft is mounted on ball bearings. Radial runout does not exceed 0.0005 inches. This configuration uses no inlet guide vanes. Surface finish on all surfaces adjacent to the flow upstream of the bearing support struts is 32 microinches or better. An abradable coating has been employed in the casing adjacent to the rotor tips. Barely visible rubs were experienced; these occurred at design speed in stall. The rotor is of integral construction, the blades and disc being machined from a single forging of 6Al-4V titanium. The stator blades are individually inserted but are machined integrally from 303 stainless steel with platforms at hub and tip. The gap between adjacent platforms lies in the range of 0 to 0.002 inches. A photograph of the rotor is shown in Figure 5 and of the stator assembly in Figure 6. The assembled stage is shown in Figure 7.

### 3. COMPRESSOR INSTRUMENTATION

Aerodynamic instrumentation in the compressor consists of measuring probes in the stator leading edges for total pressure and temperature, rakes downstream of the stators for total pressure, temperature and flow angle (circumferential), static pressure taps on the inner and outer flow paths and on the surfaces of one pair of stator blades, dynamic pressure measurements along the casing wall over the rotor tip, and dynamic strain gage measurements at several points on the rotor blades. Measurements of inlet total pressure and temperature, mass flow, relative humidity, and rotor speed are accomplished outside the compressor and are discussed in paragraph 4 of this section. The compressor research vehicle has a total of 171 sensors measuring aerodynamic parameters at various points throughout the stage. Refer to Figures 3 and 4 and Table 1 for specific locations. Some of the static pressures are sensed at more than one point and are manifolded to become, in each case, a single measurement. Figure 8 shows the vehicle instrumentation bulkhead.

#### a. Temperature Measurements

##### 1. Location

A total of fifty-one thermocouples are used to sense aerodynamic temperature within the compressor. Nine are mounted in the vane leading edges and forty-two are located in six discharge-plane rakes. The vane leading edge and rake mounted thermocouples are of the slot vented type shown in Figure 9. A detailed analysis of the features of the slot vented design, along with recovery factor characteristics, may be found in Reference 3.



- The discharge-plane rakes each have seven sensors, equally spaced radially, while rake circumferential spacing is 2.167 times the angular spacing between vane trailing edges. The nine stator leading edge thermocouple probes are distributed on two vanes; one having four sensors and the other having five. The sensors are uniformly spaced radially and aligned with the anticipated pitch angle of the flow. The locations of the vane leading edge probes and the discharge rakes are shown in Figures 3 and 4, listed in Table 1, and shown assembled in Figures 6 and 7.

## 2. Calibration

All thermocouples were fabricated from insulated, single rolls of Chromel-Constantan or Chromel-Alumel wire. The thermocouple type listed in Table I distinguishes which type was used for each measurement; "1" for Chromel-Constantan and "2" for Chromel-Alumel. Thermocouples made from samples of each roll of thermocouple wire were calibrated against a Model 162 platinum resistance bulb primary standard manufactured by Rosemount Engineering Company. A constant temperature oil bath, made by Lauda Division of Brinkman Instruments, Inc. was used as the heat medium. The bath was set at four different temperatures within the range of interest. The results, indicated in Table 2, show a worst case error of plus or minus  $0.5^{\circ}\text{F}$  at the highest temperature.

With the thermocouples calibrated as indicated, the entire electronic system employed to record temperature data was examined. The results are shown in Table 3. Taking the worst case error, at the highest temperature, for both the thermocouples and readout system yields a maximum error of plus or minus  $0.9^{\circ}\text{F}$ . The more realistic RSS error goes from  $0.23^{\circ}\text{F}$  at  $150^{\circ}\text{F}$  to  $0.65^{\circ}\text{F}$  at  $350^{\circ}\text{F}$ . Finally, when recovery factor variation is added, the RSS error at  $350^{\circ}\text{F}$  becomes plus or minus  $1.0^{\circ}\text{F}$ . Figure 10 depicts the equipment used in the calibrations.

In addition to initially calibrating the thermocouples and temperature recording electronics, calibration temperatures are monitored during each test to account for electronic drifting or component failure. Four calibration temperatures are sensed twice with each thermocouple type on every data scan. The calibration temperatures are nominally  $32^{\circ}\text{F}$ ,  $150^{\circ}\text{F}$ ,  $300^{\circ}\text{F}$ , and  $450^{\circ}\text{F}$ , which are supplied by a Model CSD-963 Temperature Calibration System manufactured by Hy-Cal Engineering. The calibration temperatures were also calibrated against the Rosemount Engineering Company Model 162 platinum resistance bulb primary standard and were found to be within plus or minus  $2^{\circ}\text{F}$  of the nominal temperature, but did not vary with time by more than plus or minus  $0.1^{\circ}\text{F}$  per  $100^{\circ}$ . Values for the calibration



temperatures used were the calibration values rather than the nominal values. The Temperature Calibration System is located adjacent to the test facility and thermocouple wires and connectors of the same type and length are used to measure both the calibration temperatures and the facility parameters. During data reduction, the calibration data are used to construct a potential difference (NBS potential minus observed potential at the calibration temperatures) verses observed potential curve. The raw data is then converted into engineering units by utilizing the calibration curve to establish a corrected value of the potential with which to enter the NBS reference tables. All thermocouples were referenced to 32°F using two Model K170 Ice Point References manufactured by Kaye Instruments, Inc. The accuracy of the reference temperature is not significantly important as long as the reference temperature is stable during a data scan.

## b. Pressure Measurements

### 1. Location

Forty-four static and fifty-one total pressures are measured in the vehicle flowpath. Sixteen of the static taps are distributed at various points on the compressor flowpath liners. In particular, ten of these are located over the rotor tip, starting at 0.25 inch axially forward of the leading edge and following at 0.25 axial increments downstream. A further ten static pressures are measured approximately mid-span radially on two adjacent vanes with seven suction side pressure taps on one vane and three pressure side taps on the other vane.

Nine total pressure probes are mounted on the leading edge of two stators, four probes on one vane and five on the other vane, equally spaced radially. These probes are of the Kiel stagnation tube design shown in Figure 11. Six pressure rakes are circumferentially spaced at 2.167 times the angular spacing between stator vane trailing edges, dividing the discharge annulus into six equal circumferential increments. Each rake contains seven radially distributed stagnation tubes with the second, fourth, and sixth element consisting of cobra-type directional probes. A typical rake configuration is shown in Figure 12. Reference 4 describes the cobra-type probe design and the calibrations of the specific probes in use. The cobra probes on each rake are individually calibrated versus yaw angle from plus ten degrees to minus ten degrees and checked over a Mach number range from 0.41 to 0.81. No dependence on Mach number was observed and a first degree polynomial least squares curve fit calibration was established for each cobra probe.



Located in conjunction with the static pressure taps placed over the rotor blade tips are ten Kulite Model Number XTS-1-190-200 dynamic pressure transducers. These transducers are recessed slightly in the abradable coating on the casing adjacent to the rotor tip to prevent damage by a minor rotor rub. The reference side of each transducer is connected to the corresponding static pressure tap at the same axial location.

## 2. Calibration

Six Kulite strain gage type transducers are used to convert the various pressures into electrical signals for processing through readout and recording. One transducer is located in each of six, forty-eight port Scanivalve<sup>1</sup> sequential pressure switching devices. The pressures to be sampled are connected to odd numbered ports while moderate vacuum is applied to all even numbered (roughing) ports to minimize hysteresis effects.

Four calibration pressures are sensed by all six Scanivalves on every scan. These are 5 PSIA, 15 PSIA, 15 PSIG, and 30 PSIG. The calibration pressures are supplied by Ametek Model PK-30 self-regulating, primary deadweight type, pressure standards. The 5 PSIA and 15 PSIA pressure standards are enclosed in sealed containers which are kept at 300 to 400 microns Hg absolute pressure and are corrected for this non-zero level. Barometric pressure is measured via two ports located on the instrument bulkhead. These ports are scanned twice for each data point. The value of barometric pressure is then obtained using the scanned values and a calibration curve established by the 5 PSIA and 15 PSIA calibration pressures. This barometric pressure value is used to correct the 15 PSIG and 30 PSIG calibration pressures to absolute values. These values are then used to complete the pressure calibration curve from 15 PSIA to 30 PSIG. The recorded outputs for the four calibration pressures are used to create a new calibration curve for each transducer for every data scan.

### c. Readout Electronics

Data are collected and recorded through use of a Hewlett Packard 2012B Data Acquisition System (DAS). This system is comprised of a 2911 guarded crossbar scanner, 2547A coupler, 2402 integrating digital voltmeter, 5050B digital recorder, and a Kennedy 1506 incremental tape recorder.

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<sup>1</sup>Scanivalve is a trademark of Scanivalve, Inc.



As previously stated, pressure measurements are routed through six Scanivalve units using Kulite transducers for conversion into electronic signals. A "Scanivalve" offers the advantage of using the same transducer to measure many pressures and lends itself to on-line calibration as described above. An interface unit was built to program the scanivalves, along with other parameters, into the HP DAS in a manner which minimizes scanning time without compromising transducer settling time. Instead of sampling the same port on all valves sequentially before stepping to the next port, the digital interface causes each valve to move incrementally through its next roughing port to its next data point immediately after being interrogated. Each transducer then has an opportunity to settle out at its next test pressure while four others are sequentially interrogated. This sequence is repeated until all ports are sampled. Approximately ten seconds lapse for the entire procedure.

#### 4. TEST FACILITY INSTRUMENTATION

##### a. Rotor Speed

A Bentley Model 306 transducer senses six grooves machined into the gearbox/rotor driveshaft coupling. The output is fed into a Model 3115 proximator for signal conditioning. The proximator signal is a train of pulses having a repetition rate corresponding to rotor RPM/10. This repetition rate is directly recorded by the HP DAS. A Bentley Model 3050 tachometer provides a visual indication of rotor speed accurate to ten RPM. The tachometer also includes an adjustable speed limiting switch as a safety feature.

##### b. Mass Flow

The inlet flow is metered through a 30-inch Universal Venturi Tube manufactured by B.I.F. Industries with a 17.400-inch throat. Meter accuracy has been calibrated to plus or minus one-half percent by the manufacturer. Static pressure taps are located both in the throat and in the inlet cavity.

##### c. Inlet (Plenum) Total Pressure and Temperature

Compressor inlet total pressure is assumed equal to plenum static pressure just downstream of the last screen. Four static taps are manifolded into one pressure source and recorded on two separate Scanivalves. At maximum flow rate, the error is no worse than 0.003 PSI, verified by calibration. Inlet total temperature is sensed by four bare junction thermocouples located in the same axial plane as the pressure taps at two different radii in the plenum.



The thermocouples are supported on two cables stretched across the inlet plenum.

#### d. Analog Compressor Mapping

An on-line plot of stage pressure ratio verses pseudo mass flow is effected through use of a Mosely Model 2FRA X-Y plotter. Teledyne pressure transducers are used to sense stage inlet PO1, stage exit PO3 from a mid-radius stagnation tube and casing P1 (measured 1.0 inch upstream of the rotor). Operational amplifiers are used to ratio exit PO3 to inlet PO1 and also to ratio casing P1 to inlet PO1. Stage pressure ratio ( $PO3/PO1$ ) is used to excite the Y-axis while the pseudo mass flow ( $1-(P1/PO1)$ ) is sent to the X-axis. The approximate compressor map so obtained is used to select a reasonable distribution of throttle settings at which to record detailed data.

#### e. Relative Humidity

A Foxboro Dewcel Model 2711TG-K222 was mounted in the inlet stack to monitor humidity. This device continuously measures the moisture content of the air by sensing the temperature at which the partial pressure of its water vapor is equal to the water vapor pressure of a saturated salt solution. The humidity information is acquired by the DAS as a thermocouple reading on every test run and subsequently treated in the Phase I data reduction program.

#### f. Strain Gage Telemetry System

To insure a clean, unobstructed inlet, a Telemetry System was used to convey strain gage data from the rotor in lieu of a slip ring. Installation of the rotating components was made in the gearbox-to-compressor driveshaft. The size of this shaft limited the system to five available channels. Figure 13 shows the Telemetry carrier tubes along side the two shafts in which they were designed to fit. Figure 14 shows the rotor downstream face with the female strain gage connector located at the center. The corresponding male half is shown in Figure 15. A connector at this interface was installed to permit removal of the rotor without disturbing gage leads. The Telemetry modules and P.M. receiver were manufactured by Acurex.

Three strain gages were applied to each of four different blades at locations previously determined during shake table tests. The redundant gages were applied to insure survival of a sufficient number to complete testing. If required, gage leads could have been changed at patches provided for that purpose, located at the rotor hub O.D. However, the five gages originally connected remained operative during the entire testing sequence thereby negating the need to make any changes.



Great care was taken during gage application to insure minimum effect on the airstream. The maximum height of the gages & lead out cross section was held to 10 mils, with the edge feathered over a large area. EpoxyLite 5403 Adhesive and fine silk cloth were used to provide the required fillet. Figure 16 shows a typical gage application.



## SECTION III

### TEST PROCEDURE AND DATA REDUCTION

#### 1. TEST PROCEDURE

Test data were taken generally in order of increasing speed, with several different compressor throttle settings being probed at each speed. The on-line analog plot of stage pressure ratio versus pseudo mass flow was used to select the test points.

For each speedline, test data were first acquired at an open throttle, open surge valve condition. The second data point was obtained with an open throttle, closed surge valve condition. Although the open surge valve produced a slight asymmetry in throttling, the increased mass flow this permitted expanded the operating range which could be mapped to a useful degree. After the second data point was acquired, the compressor was gradually throttled to induce stall. After recovery, several throttle settings in the operating range were selected to complete the mapping of the speedline. One or more of three sources were used to indicate stall: The outputs of the dynamic pressure transducers located over the rotor tip, a microphone located in the plenum, and the outputs of the strain gages located on the rotor blades. The stall condition was relieved immediately by opening the pneumatically actuated surge valve.

Test data were acquired at the rate of about one speedline per hour. Some test points were repeated on different days to assure data integrity by comparison to previously acquired data. Exceptions to the test procedure described above were required for the 90%, 95%, and 100% speedlines. The elevated power requirements for the drive motor at these speeds caused the motor windings to overheat, limiting the operating time to eight to ten minutes on any given attempt. The speed then had to be reduced for several minutes to allow the windings to cool.

Prior to each test, barometric pressure and vacuum reference pressure were recorded to check the calibration pressures. The rig was initially brought up to speed and then monitored for about ten minutes, to permit equilibrium to be reached. A five minute dwell at each throttle setting was observed prior to data acquisition. Two complete data scans were acquired at each test point.

A 12-character test identification number was manually assigned to each test point (consisting of two data scans) and acquired by the DAS as the first item of data:



CHARACTERDATA

1	Last digit of year (0-9)
2-3	Numerical month (1-12)
4-5	Numerical day of month (1-31)
6-7	Test number on that day (1-99)
8-10	Throttle setting (0-200)
11-12	Percent speed (0-00 = 100%)

During each data scan, a total of 470 data items were recorded; the channel number as the first item followed by its recorded voltage as the second item.

## 2. DATA REDUCTION - PHASE I

Phase I reduction of the test data was accomplished using the computer program described in Reference 5. This computer program converts the raw data into engineering units, groups and displays the acquired data in a readable format, provides an initial analysis of compressor stage performance, and prepares a data deck for the Phase II aerodynamic analysis. The data is checked against specified tolerance for accuracy and obvious error, and transducer calibrations are compared with manufacturer's specifications. Further data reduction is terminated if erroneous or inconsistent data is recorded. The user has the ability to edit recorded data if required.

In cases where multiple data scans are recorded at the same test point, the user has the option for the Phase II aerodynamic analysis of having one data deck prepared for each data scan, or having an "average" data deck prepared, averaging the results of all scans at that test point. The averaging option was employed with two scans per test point. The following options of the Phase I data reduction program were also used:

- a. Temperature effects were considered in calculating gas properties.
- b. Thermocouple calibration data was available and this data was utilized in the conversion of the thermocouple outputs.
- c. The program automatically corrects all results to standard sea-level conditions.

Printed outputs were generated for each data scan and the two scans at each test point were manually compared to check for any errors or instability.



### 3. DATA REDUCTION - PHASE II

#### a. Basic Program Description

Phase II reduction of the test data was performed using the computer program described in Reference 6. This computer program provides a detailed aerodynamic analysis of the test compressor stage, utilizing the geometry of the stage and the Phase I output data deck as inputs. Analysis of each test point is performed individually, although any number of test points may be analyzed in one computer run.

The system of equations incorporated into the Phase II computer program includes a full treatment of the axisymmetric equations of motion of an inviscid fluid, including blade-force terms, and the assumption of a thermally-perfect gas as the working fluid. The equations are solved in finite difference form by the streamline curvature method. Wake and boundary layer blockages and flow deviation within blade rows are either calculated or input as a user option in the computer program.

Output from the program includes printed details of the flow field at each computing station, performance details for the blade-sections, calculated blockages, and, optionally, CALCOMP plots of blade performance parameters and the stage static pressure distribution.

#### b. Across-Blade Analysis

Phase II Across-Blade analysis was performed for each test point on all speedlines. The computing station axial distribution for the Across-Blade analysis is shown in Figure 17 (it should be noted in the figure that the computing stations need not be radial and can be input as curvilinear; i.e., to follow blade edges). Wake and boundary layer blockages were iteratively determined by the program at stations 7, 8, 11, 12, 13 where experimental casing static pressures could be matched by the calculated values. At stations 9 and 10 where no experimental casing static pressures were measured, blockage values were linearly interpolated between the values calculated at stations 8 and 11.

#### c. Thru-Blade Analysis

To obtain a more detailed picture of the flow within the compressor rotor, the test point closest to design point was chosen for Thru-Blade analysis. The more detailed analysis involved the introduction of four additional computing stations within the rotor. The location of the additional computing stations is shown in Figure 17.



Initial data input for deviation and blockage was based on design values and distributions. Due to the difficulty of obtaining a converged thru-blade solution at design flow, input deviation values were frozen at all internal stations. In addition, blockage values at stations 7 and 8 were also held to initial input values. This required some manual iteration of values between computer runs.

Convergence of the final solution was based on the following criteria:

1. The desired flow was passed through the stage.
2. Experimental casing static pressure values were matched within set tolerance limits.
3. Reasonable axial distributions of blockage and deviation were achieved.



## SECTION IV

### RESULTS

#### 1. OVER-ALL PERFORMANCE

The mass-averaged performance of the rotor and of the complete compressor stage is tabulated in Table 4 and plotted in Figures 18 and 19. The performance indicates that all of the rotor and stage design goals were achieved. At 100 percent design corrected speed, corrected flow was approximately .5 lb./sec. higher than design, rotor efficiency was 3.5 points higher at a value of 90.4 percent, stage efficiency was 5.2 points higher at a value of 88.2 percent, rotor total pressure ratio was 6.8 percent higher at a value of 2.100, and stage total pressure ratio was 8.0 percent higher at a value of 2.065. The compressor was throttled to stall at each corrected speed shown on the map, with the exception of 75, 80, 85 and 100% speeds. A region of aerodynamic instability was encountered near stall at the 75, 80 and 85% speeds. At 100% speed, a slight casing rub near stall prevented data from being taken. For the other speeds the data point nearest stall was taken at a throttle opening approximately 0.5 percent further open than the setting which precipitated stall. This change in throttle area is equivalent to about 0.49 percent of the annulus area at the rotor inlet.

#### 2. BLADE-ELEMENT PERFORMANCE (ACROSS BLADE)

The radial distributions of relative inlet Mach number, incidence angle, loss coefficient, diffusion factor, and deviation angle for both rotor and stator are presented in Figures 20 through 119, using Tables 5 through 14, for each data point shown on the compressor map. One set of these five radial distributions is presented for each blade row at each corrected speed. In each of these sets, the distributions for all throttle settings are superimposed on each respective plot. This data, also used for the compressor map, was reduced with computing stations only at blade-row edges and in free spaces as described in Section III-3b. There were no computing stations internal to blade rows.

It should be noted in the plots of radial distribution of rotor incidence that there is a notable fluctuation in incidence at all speeds between approximately 5.5 and 6.5 inches radial distance. This perturbation in incidence was caused by an input error in the final rotor blade design computer run. Specifically, at computing station 1 of the Streamsurface Geometry Specification input, the radii at streamlines 11 and 12 were reversed. Since computing station 1 is located upstream of the rotor leading



edge (computing station 2), streamlines 11 and 12 crossed at the rotor leading edge. This ultimately affected the final blade shape in that region of the rotor.

### 3. DESIGN SPEED DETAILED RESULTS

The data point at 100% corrected speed closest to design flow and maximum efficiency was selected for Phase II Thru-Blade analysis. The identification number for this data point is 602200201900. Details of the thru-blade analysis technique are given in Section III-3c.

During the analysis procedure it was determined that several of the Phase II program calculation options could be varied and a converged solution could be obtained according to the criteria in Section III-3c for these different sets of input options. Specifically, two input options were varied. First, the rotor outlet total pressure can be obtained either from instrumentation readings located at the stator leading edge (option  $P_o = 0$ ) or from instrumentation rakes located in the stage discharge plane (option  $P_o = 1$ ). The stator leading edge option uses mean total pressure readings while the stage rake plane option utilizes peak total pressure readings. The second program option concerns the blockage distribution factor input for the rotor trailing edge. This distribution factor (BDIST) varies the value of blockage at a computing station linearly from hub to tip by the following ratio:

$$\text{BDIST} = \frac{\text{HUB BLOCKAGE}}{\text{MIDRADIUS BLOCKAGE}}$$

Two values were used in the analysis: BDIST = 1.0 and 1.37. To summarize, the following list describes the input values varied for the four different thru-blade analysis cases for test point 602200201900:

- Case 1:  $P_o = 0$ , BDIST = 1.37
- Case 2:  $P_o = 1$ , BDIST = 1.0
- Case 3:  $P_o = 1$ , BDIST = 1.37
- Case 4:  $P_o = 0$ , BDIST = 1.0

The results of the four cases indicated two major trends. First, varying the  $P_o$  option and holding the BDIST option fixed influenced the radial distribution of rotor and stator losses, rotor deviation and stator incidence. Second, holding the  $P_o$  option fixed and varying the BDIST option affected the level of rotor hub trailing edge deviation and the axial variation of stage mid-span blockage.

Of the four cases analyzed, Cases 1 and 2 provided the closest experimental casing static pressure match and are



presented in detail. The detailed aerodynamic results for Case 1 and 2 are described separately in computer printouts listed in Appendix A. Comparison plots of the radial distribution of the same five parameters for rotor and stator described in the across-blade results are shown in Figures 120 through 129, using the symbols listed in Table 15. The axial static pressure distribution for each case is shown in Figures 130 and 131. A comparison of the effects of the analysis program options on the axial distribution of rotor deviation and stage blockage is shown in Figures 132 through 134, respectively.

In addition to the case 1 and 2 comparison results, other plots for test pt 602200201900 are shown in Figures 135 through 140. These include a plot of stator mid-span static pressure, compressor hub and tip geometry and velocity diagram plots, and stage exit contour plots for total pressure, flow rate parameter and total temperature.

#### 4. DESIGN POINT COMPARISON RESULTS

To obtain a comparison between design and experimental data, results from the Case 2 100% speed data point (I.D. 602200201900) were compared with the design prediction values and are shown in Figures 141 through 150, using the symbols listed in Table 16. These plots show the same radial distributions for rotor and stator as described in the previous section. Also included in these plots are the across blade results for test point 602200201900.

#### 5. ROTOR TIP DYNAMIC PRESSURE MEASUREMENTS

Only a fraction of this data has been processed to-date and, consequently, only a few general observations concerning the dynamic pressure measurements will be made in this report. Principal attention was focused on design speed behavior at three throttle settings. These settings were 00 (choked conditions), 19 (stage peak efficiency) and 31 (near stall). At throttle setting 00, the passage shock appears to depart from the leading-edge pressure surface obliquely, merging to a normal shock about half way across the passage. At throttle setting 19, the passage shocks appear to have nearly merged into a single normal shock. At throttle setting 31, the passage shock has been disgorged and is standing ahead of the leading edge, as would be expected. It is interesting to note that throttle setting 00 is closest to the design back pressure level and expected shock pattern, but the nearly normal shock corresponding to throttle setting 19 produced minimum losses.



## SECTION V

### CONCLUSIONS

The extremely high efficiency achieved by this compressor stage has resulted in much effort being expended in attempts to identify precisely which features of the design are most significant. Definitive conclusions of this sort have not been possible. However, certain features of the design do appear to have contributed.

The first principal conclusion drawn is that the method of airfoil optimization chosen, which was applied uniformly to both blade rows, appears broadly successful. To refresh the readers memory, as described in Reference 1, the work distribution in the rotor, and angular momentum distribution in the stator, were adjusted to achieve a minimum (circumferential average) static pressure gradient, modified only by a concession made to the Kutta condition near the trailing edge. The same criteria was applied regardless of whether the Mach number was moderate subsonic, as at the stator tip, or high supersonic, as at the rotor tip. It would seem excessively fortuitous if this had not contributed significantly.

The second principal conclusion drawn is that the optimization technique mentioned above plus the choice of an axial velocity ratio across the rotor of substantially less than 1.0 did an excellent job of controlling shock losses. The low axial velocity ratio kept the airfoil camber to a minimum and the optimization technique controlled the airfoil surface curvature. Figure 151 shows some design speed, peak efficiency data points on a loss parameter versus diffusion factor plot. Because the dynamic pressure transducers over the rotor tip showed the passage shock to be approximately normal at peak efficiency operation, the measured loss coefficients were corrected by subtracting normal shock loss at the relative inlet Mach number to obtain the data points shown on the Figure. These points appear so unreasonably low that two possibilities are immediately evident. The first is that the shock losses may have actually been less than normal shock losses because of small secondary shocks present. The second, and perhaps more likely, possibility is that most of the rotor diffusion loss, which is contained in the rotor wake, has been attributed to the stator because that is where the fluid mixing of the rotor wakes occurred. That is somewhat substantiated by Figure 152 where the data points for the stator appear higher than expected. Unlike Figure 151, the data in Figure 152 has not been corrected for any shock loss since the Mach number reached a maximum of about 1.0 at the hub and it was presumed that the sweep was fully effective.



The third principal conclusion drawn is that the swept leading edge at the stator hub also probably had a major impact on the design. In spite of the stator hub Mach number of approximately 1.0, the stator hub losses were astoundingly low. As shown in Figure 152, the total pressure loss parameter was lowest in that region. However, what Figure 152 most likely shows best is the secondary flow effect produced by the stator leading edge shape. The strong sweep at the hub and the mild sweep at the tip have forced the fluid with the least momentum toward mid-passage where it is most harmless.

It has not been possible to draw firm conclusions regarding the airfoil/platform fillet treatment. However, the fillet treatment obviously did not penalize the design and may well have contributed usefully.

Overall stage performance may be viewed in at least two ways compared to design conditions. If one considers performance at design flow, both pressure ratio and efficiency goals were substantially exceeded with 2.065 versus 1.912 recorded for stage total pressure ratio and 0.882 versus 0.830 recorded for stage isentropic efficiency. On the other hand, if one evaluates stage performance at design total pressure ratio, the choked flow of 63.12 lb/sec slightly exceeded the design flow of 62.60 lb/sec and the stage isentropic efficiency at 0.856 is 2.6 points above the design value of 0.830. This efficiency was obtained through a slight extrapolation of a plot of total pressure ratio versus isentropic efficiency. This latter method of viewing the performance may be preferable from an engine operating line viewpoint because of the increased stall margin.



TABLE 1  
INSTRUMENTATION LIST

ITEM NO.	TYPE SENSOR	LOCATION		ARRAY NAME	SUB.		TYPE THERMO.	REMARKS	
		AXIAL	RADIAL		I	J			
14	T/C			PPT	1	1	1	Proximity Probe	"
15	T/C			PPT	2		1	"	"
16	T/C			PPT	3		1	"	"
17	T/C	-4.800	7.75	ROI	2		1	Rotor Outlet Total Temperature	"
18	T/C	-4.685	7.00	ROI	4		1	"	"
19	T/C	-4.667	6.25	ROI	6		1	"	"
20	T/C	-4.735	5.50	ROI	8		1	"	"
21	T/C			TC	1	3	1	32° Calibration Temperature	"
22	T/C			TC	1	4	1	32°	"
23	T/C			TC	2	3	1	150°	"
24	T/C			TC	2	4	1	150°	"
25	T/C			TC	3	3	1	300°	"
26	T/C			TC	3	4	1	300°	"
27	T/C			TC	4	3	1	450°	"
28	T/C			TC	4	4	1	450°	"
29	T/C	-0.474	8.162	SOT	1	1	1	Stator Out. Total Temp. - RAKE #8	"
30	T/C	-0.474	7.823	SOT	2	1	1	"	"
31	T/C	-0.474	7.484	SOT	3	1	1	"	"
32	T/C	-0.474	7.145	SOT	4	1	1	"	"
33	T/C	-0.474	6.806	SOT	5	1	1	"	"
34	T/C	-0.474	6.467	SOT	6	1	1	"	"
35	T/C	-0.474	6.128	SOT	7	1	1	"	"
36	T/C	-0.474	8.162	SOT	1	3	1	"	RAKE #10
37	T/C	-0.474	7.823	SOT	2	3	1	"	"
38	T/C	-0.474	7.484	SOT	3	3	1	"	"
39	T/C	-0.474	7.145	SOT	4	3	1	"	"
40	T/C	-0.474	6.806	SOT	5	3	1	"	"
41	T/C	-0.474	6.467	SOT	6	3	1	"	"
42	T/C	-0.474	6.128	SOT	7	3	1	"	"
43	T/C	-0.474	8.162	SOT	1	5	1	"	RAKE # 5
44	T/C	-0.474	7.823	SOT	2	5	1	"	"
45	T/C	-0.474	7.484	SOT	3	5	1	"	"
46	T/C	-0.474	7.145	SOT	4	5	1	"	"



TABLE 1 (Cont'd)  
INSTRUMENTATION LIST

ITEM NO.	TYPE SENSOR	LOCATION		ARRAY NAME	SUB.		TYPE THERMO.	REMARKS
		AXIAL	RADIAL		I	J		
47	T/C	-0.474	6.806	334°50'	5	5	1	Stator Out. Tot. Temp. - RAKE #5
48	T/C	-0.474	6.467	334°50'	6	5	1	"
49	T/C	-0.474	6.128	334°50'	7	5	1	"
50	T/C	-0.474	7.145	158°43'	4	4	2	"
60	T/C			DPT	1		2	Dewcel Temperature
61	T/C			PT	1		2	Plenum Temperature
62	T/C			PT	2		2	"
63	T/C			PT	3		2	"
64	T/C			PT	4		2	"
65	T/C	-4.870	8.125	Vane 30	1		2	Rotor Outlet Total Temperature
66	T/C	-4.727	7.375	Vane 30	3		2	"
67	T/C	-4.660	6.625	Vane 30	5		2	"
68	T/C	-4.680	5.875	Vane 30	7		2	"
69	T/C	-4.933	5.125	Vane 30	9		2	"
70	T/C			TC	1	1	2	32° Calibration Temperature
71	T/C			TC	1	2	2	32°
72	T/C			TC	2	1	2	150°
73	T/C			TC	2	2	2	150°
74	T/C			TC	3	1	2	300°
75	T/C			TC	3	2	2	300°
76	T/C			TC	4	1	2	450°
77	T/C			TC	4	2	2	450°
78	T/C	-0.474	8.162	209°02'	1	6	2	Stator Out. Tot. Temp. - RAKE #7
79	T/C	-0.474	7.823	209°02'	2	6	2	"
80	T/C	-0.474	7.484	209°02'	3	6	2	"
81	T/C	-0.474	7.145	209°02'	4	6	2	"
82	T/C	-0.474	6.806	209°02'	5	6	2	"
83	T/C	-0.474	6.467	209°02'	6	6	2	"
84	T/C	-0.474	6.128	209°02'	7	6	2	"
85	T/C	-0.474	8.162	108°24'	1	2	2	"
86	T/C	-0.474	7.823	108°24'	2	2	2	"
87	T/C	-0.474	7.484	108°24'	3	2	2	"
88	T/C	-0.474	7.145	108°24'	4	2	2	"



## INSTRUMENTATION LIST

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TABLE 1 (Cont'd)  
INSTRUMENTATION LIST

ITEM NO.	TYPE SENSOR	LOCATION			ARRAY NAME	SUB		SCAN.	REMARKS	
		AXIAL	RADIAL	CIRCUM.		I	J			
101	PT	-0.474	8.161	0° 0'	SOP	1	6	1	Stator Out. Tot. Pressure - RAKE # 11	
103	PT	-0.474	7.822	0° 0'	SOPAN	2	6	1	"	
105	PT	-0.474	7.822	0° 0'	SOP	2	6	1	"	
107	PT	-0.474	7.822	0° 0'	SOPAP	2	6	1	"	
109	PT	-0.474	7.483	0° 0'	SOP	3	6	1	"	
111	PT	-0.474	7.144	0° 0'	SOPAN	4	6	1	"	
113	PT	-0.474	7.144	0° 0'	SOP	4	6	1	"	
115	PT	-0.474	7.144	0° 0'	SOPAP	4	6	1	"	
117	PT	-0.474	6.806	0° 0'	SOP	5	6	1	"	
119	PT	-0.474	6.467	0° 0'	SOPAN	6	6	1	"	
121	PT	-0.474	6.467	0° 0'	SOP	6	6	1	"	
123	PT	-0.474	6.467	0° 0'	SOPAP	6	6	1	"	
125	PT	-0.474	6.128	0° 0'	SOP	7	6	1	"	
127	PS	-4.030	6.746	Vane 12	SPSSP	1		1	Stator Pres. Side Stat. Pres. - 25%	
129	PS	-3.670	6.803	Vane 12	SPSSP	2		1	"	
131	PS	-3.320	6.863	Vane 12	SPSSP	3		1	"	
133	PS				BP	1		1	Barometric Pressure	
135	PT				PP	1		1	Plenum Total Pressure	
137	PS				VP2	1		1	Venturi Inlet Pressure	
139	PS				VP1	1		1	Venturi Throat Pressure	
141	REF.				PC	1	1	1	5 psia Reference Pressure	
143	REF.				PC	1	2	1	15 psia	
145	REF.				PC	1	3	1	15 psig	
147	REF.				PC	1	4	1	30 psig	
201	PT	-0.474	8.161	83° 14'	SOP	1	1	2	Stator Out. Tot. Pressure - RAKE # 1	
203	PT	-0.474	7.822	83° 14'	SOPAN	2	1	2	"	
205	PT	-0.474	7.822	83° 14'	SOP	2	1	2	"	
207	PT	-0.474	7.822	83° 14'	SOPAP	2	1	2	"	
209	PT	-0.474	7.483	83° 14'	SOP	3	1	2	"	
211	PT	-0.474	7.144	83° 14'	SOPAN	4	1	2	"	
213	PT	-0.474	7.144	83° 14'	SOP	4	1	2	"	
215	PT	-0.474	7.144	83° 14'	SOPAP	4	1	2	"	
217	PT	-0.474	6.806	83° 14'	SOP	5	1	2	"	



TABLE 1 (Cont'd)  
INSTRUMENTATION LIST

ITEM NO.	TYPE SENSOR	LOCATION		ARRAY NAME	SUB		SCAN.	REMARKS	
		AXIAL	RADIAL		CTRUM.	I			J
219	PT	-0.474	6.466	83°14'	SOPAN	6	1	2	Stator Out. - Pres. - RAKE # 1
221	PT	-0.474	6.466	83°14'	SOP	6	1	2	" Tot. " "
223	PT	-0.474	6.466	83°14'	SOPAP	6	1	2	" + " "
225	PT	-0.474	6.127	83°14'	SOP	7	1	2	" Tot. " "
227	PT	-4.933	8.125	Vane 20	ROP	1		2	Rotor Outlet Total Pressure
229	PT	-4.689	7.375	Vane 20	ROP	3		2	" " "
231	PT	-4.660	6.625	Vane 20	ROP	5		2	" " "
233	PT	-4.727	5.875	Vane 20	ROP	7		2	" " "
235	PT	-4.870	5.125	Vane 20	ROP	9		2	" " "
237	PS				VP2	2		2	Venturi Inlet Pressure
239	PS				VP1	2		2	Venturi Throat Pressure
241	REF.				PC	2	1	2	5 psia Reference Pressure
243	REF.				PC	2	2	2	15 psia " "
245	REF.				PC	2	3	2	15 psig " "
247	REF.				PC	2	4	2	30 psig " "
301	PT	-0.474	8.161	133°33'	SOP	1	3	3	Stator Out. Tot. Pres. - RAKE # 2
303	PT	-0.474	7.822	133°33'	SOPAN	2	3	3	" - " "
305	PT	-0.474	7.822	133°33'	SOP	2	3	3	" Tot. " "
307	PT	-0.474	7.822	133°33'	SOPAP	2	3	3	" + " "
309	PT	-0.474	7.493	133°33'	SOP	3	3	3	" Tot. " "
311	PT	-0.474	7.144	133°33'	SOPAN	4	3	3	" - " "
313	PT	-0.474	7.144	133°33'	SOP	4	3	3	" Tot. " "
315	PT	-0.474	7.144	133°33'	SOPAP	4	3	3	" + " "
317	PT	-0.474	6.805	133°33'	SOP	5	3	3	" Tot. " "
319	PT	-0.474	6.466	133°33'	SOPAN	6	3	3	" - " "
321	PT	-0.474	6.466	133°33'	SOP	6	3	3	" Tot. " "
323	PT	-0.474	6.466	133°33'	SOPAP	6	3	3	" + " "
325	PT	-0.474	6.127	133°33'	SOP	7	3	3	" Tot. " "
327	PS	-4.240	6.716	Vane 11	SPSSS	1		3	Stator Suc. Side Stat. Pressure - 17%
329	PS	-4.076	6.746	Vane 11	SPSSS	2		3	" " 25%
331	PS	-3.800	6.774	Vane 11	SPSSS	3		3	" " 32%
333	PS	-3.713	6.803	Vane 11	SPSSS	4		3	" " 40%
335	PS	-3.526	6.830	Vane 11	SPSSS	5		3	" " 49%



TABLE 1 (Cont'd)  
INSTRUMENTATION LIST

ITEM NO.	TYPE SENSOR	LOCATION		ARRAY NAME	SUB		SCAN.	REMARKS
		AXIAL	RADIAL		I	J		
337	PS	-3.340	6.863	Vane 11	6		3	Stator Suc. Side Stat. Pressure - 57%
339	PS	-3.140	5.894	Vane 11	7		3	" " " " 66%
341	REF.			PC	3	1	3	5 psia Reference Pressure
343	REF.			PC	3	2	3	15 psia
345	REF.			PC	3	3	3	15 psig
347	REF.			PC	3	4	3	30 psig
401	PT	-0.474	8.161	183°52'	1	5	4	Stator Out. Tot. Pres. - RAKE # 4
403	PT	-0.474	7.822	183°52'	2	5	4	" " " " "
405	PT	-0.474	7.822	183°52'	2	5	4	" " " " Tot.
407	PT	-0.474	7.822	183°52'	2	5	4	" " " " "
409	PT	-0.474	7.483	183°52'	3	5	4	" " " " Tot.
411	PT	-0.474	7.144	183°52'	4	5	4	" " " " "
413	PT	-0.474	7.144	183°52'	4	5	4	" " " " Tot.
415	PT	-0.474	7.144	183°52'	4	5	4	" " " " +
417	PT	-0.474	6.805	183°52'	5	5	4	" " " " Tot.
419	PT	-0.474	6.466	183°52'	6	5	4	" " " " "
421	PT	-0.474	6.466	183°52'	6	5	4	" " " " Tot.
423	PT	-0.474	6.466	183°52'	6	5	4	" " " " +
425	PT	-0.474	6.127	183°52'	7	5	4	" " " " Tot.
427	PS	-0.563	8.500	4@60°	1		4	Downstream Casing Static Pressure
429	PS	-8.001	8.500	343°44'	1		4	Static Pressure Over Rotor
431	PS	-7.751	8.500	5°26'	2		4	" " " " "
433	PS	-7.501	3.500	350°31'	3		4	" " " " "
435	PS	-7.251	8.500	11°47'	4		4	" " " " "
437	PS	-7.001	8.500	356°47'	5		4	" " " " "
439	PS	-6.751	8.500	17°40'	6		4	" " " " "
441	REF.			PC	4	1	4	5 psia Reference Pressure
443	REF.			PC	4	2	4	15 psia
445	REF.			PC	4	3	4	15 psig
447	REF.			PC	4	4	4	30 psig
501	PT	-0.474	8.161	259°21'	1	2	5	Stator Out. Tot. Pres. - RAKE # 6
503	PT	-0.474	7.822	259°21'	2	2	5	" " " " "
505	PT	-0.474	7.822	259°21'	2	2	5	" " " " Tot.



TABLE 1 (Cont'd)  
INSTRUMENTATION LIST

ITEM NO.	TYPE SENSOR	LOCATION			ARRAY NAME	SUB		SCAN.	REMARKS
		AXIAL	RADIAL	CIRCUM.		I	J		
509	PT	-0.474	7.822	259°21'	SOPAP	2	2	5	Stator Out. + Pres. - RAKE # 6
509	PT	-0.474	7.483	259°21'	SOP	3	2	5	" Tot. "
511	PT	-0.474	7.144	259°21'	SOPAN	4	2	5	" "
513	PT	-0.474	7.144	259°21'	SOP	4	2	5	" Tot. "
515	PT	-0.474	7.144	259°21'	SOPAP	4	2	5	" + "
517	PT	-0.474	6.805	259°21'	SOP	5	2	5	" Tot. "
519	PT	-0.474	6.466	259°21'	SOPAN	6	2	5	" - "
521	PT	-0.474	6.466	259°21'	SOP	6	2	5	" Tot. "
523	PT	-0.474	6.466	259°21'	SOPAP	6	2	5	" + "
525	PT	-0.474	6.127	259°21'	SOP	7	2	5	" Tot. "
527	PS	-0.519	5.790	4060°	SPID2	1		5	Downstream Hub Static Pressure
529	PT	-4.800	7.750	Vane 3	RDP	2		5	Rotor Outlet Total Pressure
531	PT	-4.685	7.000	Vane 3	RDP	4		5	" "
533	PT	-4.667	6.250	Vane 3	RDP	6		5	" "
535	PT	-4.735	5.500	Vane 3	RDP	8		5	" "
537	PS	-8.751	8.500	30°00'	SPOD1	1		5	Upstream Casing Static Pressure
539	PS	-8.751	8.500	120°00'	SPOD1	2		5	" "
541	REF.				PC	5	1	5	5 psia Reference Pressure
543	REF.				PC	5	2	5	15 psia
545	REF.				PC	5	3	5	15 psig
547	REF.				PC	5	4	5	30 psig
601	PT	-0.474	8.161	309°41'	SOP	1	4	6	Stator Out. Tot. Pres. - RAKE # 9
603	PT	-0.474	7.822	309°41'	SOPAN	2	4	6	" - "
605	PT	-0.474	7.822	309°41'	SOP	2	4	6	" Tot. "
607	PT	-0.474	7.822	309°41'	SOPAP	2	4	6	" + "
609	PT	-0.474	7.483	309°41'	SOP	3	4	6	" Tot. "
611	PT	-0.474	7.144	309°41'	SOPAN	4	4	6	" - "
613	PT	-0.474	7.144	309°41'	SOP	4	4	6	" Tot. "
615	PT	-0.474	7.144	309°41'	SOPAP	4	4	6	" + "
617	PT	-0.474	6.805	309°41'	SOP	5	4	6	" Tot. "
619	PT	-0.474	6.466	309°41'	SOPAN	6	4	6	" - "
621	PT	-0.474	6.466	309°41'	SOP	6	4	6	" Tot. "
623	PT	-0.474	6.466	309°41'	SOPAP	6	4	6	" + "



TABLE 1 (Cont'd)

[illegible]



TABLE II  
CALIBRATION OF SAMPLE THERMOCOUPLES

BATH SET PT °C <sup>A</sup> °F <sup>B</sup>	AVG. OF 9 SAMPLES °F	MAX. SPREAD ± °F
65   148.1	148.4	0.1
100   211.4	210.9	0.1
150   300.8	301.4	0.4
175   346.5	346.4	0.5

A   Oil Bath Set Pt.  
B   Mueller bridge readout converted to temperature.

TABLE III  
CALIBRATION OF TEMPERATURE READOUT ELECTRONICS

SET PT. Avg <sup>+</sup> °F.	PRINTER OUTPUT Avg <sup>*</sup> °F	MAX. SPREAD ± °F
148.2	148.3	0.2
210.7	210.7	0.2
301.7	301.7	0.3
345.4	345.5	0.4

+   Average of two calibrated T/C's.  
\*   Average of eight channels.



TABLE IV  
MASS-AVERAGED COMPRESSOR PERFORMANCE

TEST I.O.	RPM	FLOW (LB/SEC)	ROTOR		STAGE	
			PRESSURE RATIO	EFFICIENCY	PRESSURE RATIO	EFFICIENCY
510290100040	9076.0	22.232	1.1227	.8534	1.1203	.8374
510290200140	9380.9	21.765	1.1246	.8495	1.1218	.8316
510290300150	9076.8	21.305	1.1254	.8425	1.1225	.8239
510290400040	8385.6	23.730	1.1275	.8351	1.1240	.8128
510290500040	8074.9	23.105	1.1276	.8237	1.1235	.7981
510290600040	8076.3	18.830	1.1203	.7866	1.1141	.7478
510290700540	8092.1	17.350	1.1153	.7444	1.1067	.6908
510290800050	10091.3	28.245	1.1973	.8611	1.1941	.8455
510290900150	10093.3	27.515	1.2002	.8525	1.1962	.8365
510291000150	10095.1	27.365	1.2013	.8511	1.1973	.8350
511250100250	10112.3	26.646	1.2042	.8446	1.1991	.8249
511250200250	10103.5	26.342	1.2046	.8392	1.1995	.8195
511250300250	10110.4	25.962	1.2057	.8323	1.1997	.8097
511250400450	10111.0	25.207	1.2053	.8169	1.1975	.7875
511250500050	12133.9	34.563	1.2979	.8685	1.2923	.8535
511250700250	12133.7	33.645	1.3018	.8589	1.2956	.8428
511250901560	12143.8	33.124	1.3044	.8538	1.2979	.8372
511250902360	12143.5	32.555	1.3049	.8456	1.2981	.8284
511251003060	12143.3	31.959	1.3063	.8352	1.2985	.8157
511251103650	12141.1	31.333	1.3066	.8313	1.2969	.8070
511251204060	12147.0	30.636	1.3054	.8200	1.2939	.7918
511250100070	1175.1	41.325	1.4258	.8770	1.4181	.8605
511260200270	1165.7	49.250	1.4332	.8640	1.4229	.8449
511260301470	1162.2	39.653	1.4373	.8647	1.4256	.8450
511250402070	1178.3	39.183	1.4401	.8557	1.4269	.8340
511260502670	1165.5	38.605	1.4412	.8547	1.4268	.8310
511260603170	1165.7	37.990	1.4412	.8477	1.4248	.8197
511260703570	1157.0	37.371	1.4386	.8399	1.4203	.8088
601290100075	15247.6	45.401	1.5159	.8916	1.5010	.8700
601290200275	15255.1	44.138	1.5202	.8796	1.5037	.8560
601290301275	15260.2	43.470	1.5210	.8719	1.5040	.8480
601290401875	15264.7	42.811	1.5202	.8630	1.5026	.8368
512850200060	15189.4	49.091	1.6033	.9080	1.5876	.8867
512850100280	15180.8	47.705	1.6125	.9020	1.5922	.8760
512450301260	15135.4	47.099	1.6139	.8930	1.5927	.8657
512450501600	15134.6	46.605	1.6152	.8880	1.5920	.8587
512460200085	17231.2	53.405	1.7125	.9175	1.6948	.8990
512450301005	17227.3	51.965	1.7250	.9080	1.7016	.8840
512450301495	17217.1	51.544	1.7269	.9070	1.7022	.8810
512460601885	17213.9	51.114	1.7248	.9040	1.7029	.8770
512460702285	17215.0	50.532	1.7321	.9020	1.7046	.8740
512460802685	17219.2	50.155	1.7351	.8980	1.7057	.8680
512460502685	17225.2	49.635	1.7378	.8940	1.7052	.8610
512470300090	19182.7	57.607	1.8291	.9320	1.8035	.9090
601150300230	11145.4	55.911	1.8365	.9120	1.8112	.8950
601220301590	15151.4	55.006	1.8440	.9070	1.8152	.8800
601220402090	15139.5	54.389	1.8466	.9040	1.8152	.8760
601220502590	15138.1	53.655	1.8491	.8990	1.8149	.8701
601220503090	15143.7	52.899	1.8532	.8940	1.8122	.8590
601220703590	15144.2	52.150	1.8562	.8910	1.8073	.8490



TABLE IV (CONT'D)

TEST I.O.	RPM	FLOW (L3/SEC)	ROTOR		STAGE	
			PRESSURE RATIO	EFFICIENCY	PRESSURE RATIO	EFFICIENCY
601300100035	14322.6	61.517	1.9408	.9190	1.9118	.8960
601300200235	19329.2	60.990	1.9944	.9260	1.9601	.9001
601300301035	13317.9	69.559	2.9001	.9217	1.9648	.8956
601300401735	13321.6	59.772	2.9056	.9180	1.9673	.8900
601300502035	13318.0	53.315	2.9066	.9110	1.9680	.8830
601290502435	13312.9	59.817	2.9083	.9070	1.9668	.8770
601290702835	13291.2	58.057	2.9081	.9047	1.9635	.8726
601290803235	13311.1	57.243	2.9100	.8960	1.9567	.8580
601290903735	13317.4	55.237	2.9142	.8940	1.9447	.8450
601160200000	20173.1	63.119	1.9798	.8830	1.9573	.8667
601160400200	20178.7	62.968	2.9367	.8940	2.0161	.8788
601220101000	20174.4	62.988	2.9536	.8958	2.0267	.8777
601220301600	20143.1	62.762	2.9820	.9020	2.0494	.8810
602200201900	20152.4	62.642	2.9997	.9040	2.0652	.8820
601220302300	20193.8	62.398	2.9195	.9110	2.0744	.8820
601221102610	20165.2	61.921	2.1378	.9100	2.0844	.8766
602200302700	20112.7	62.168	2.1293	.9140	2.0786	.8817
602200403100	20134.2	50.949	2.1322	.9070	2.0703	.8680



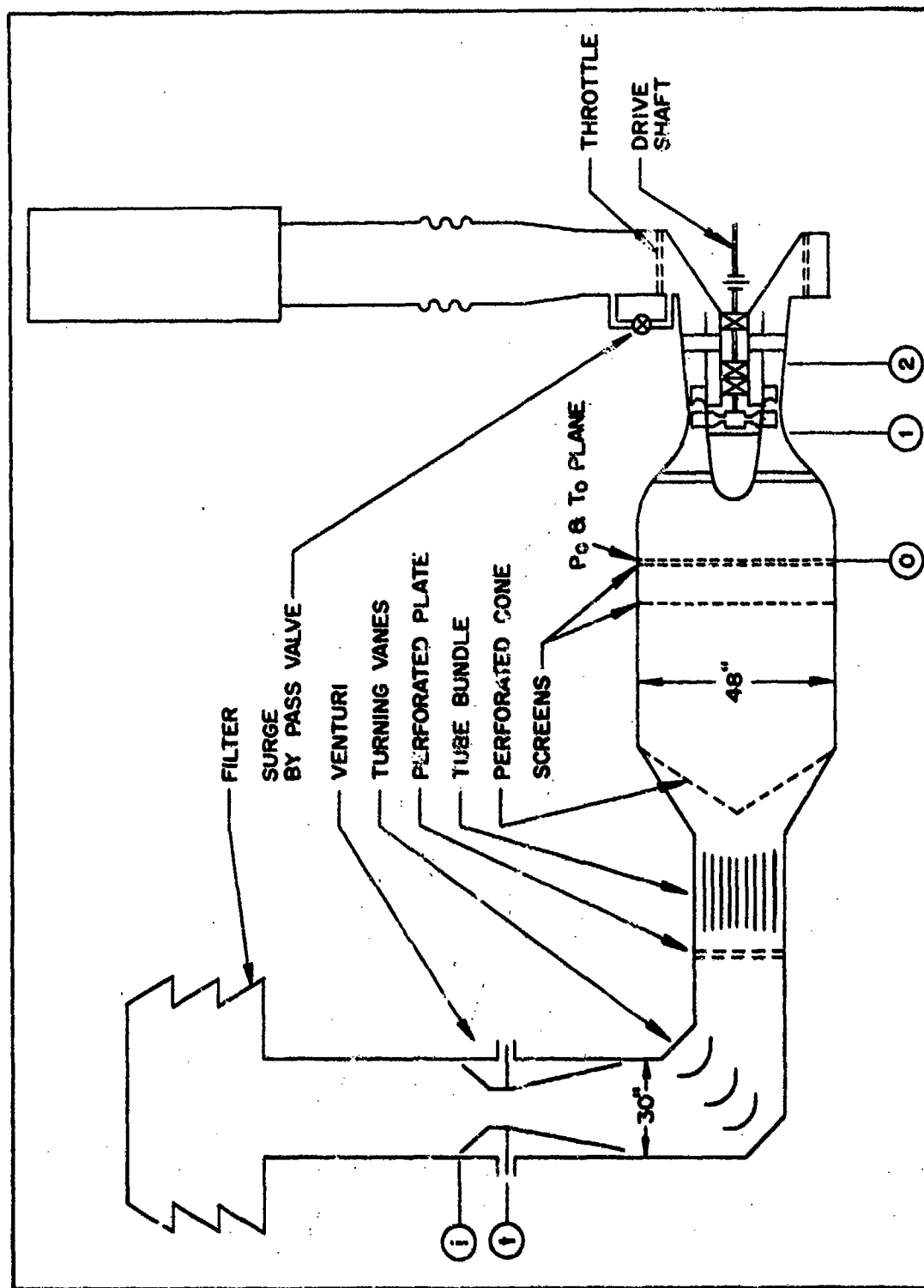


FIGURE 1. COMPRESSOR FACILITY FLOW PATH



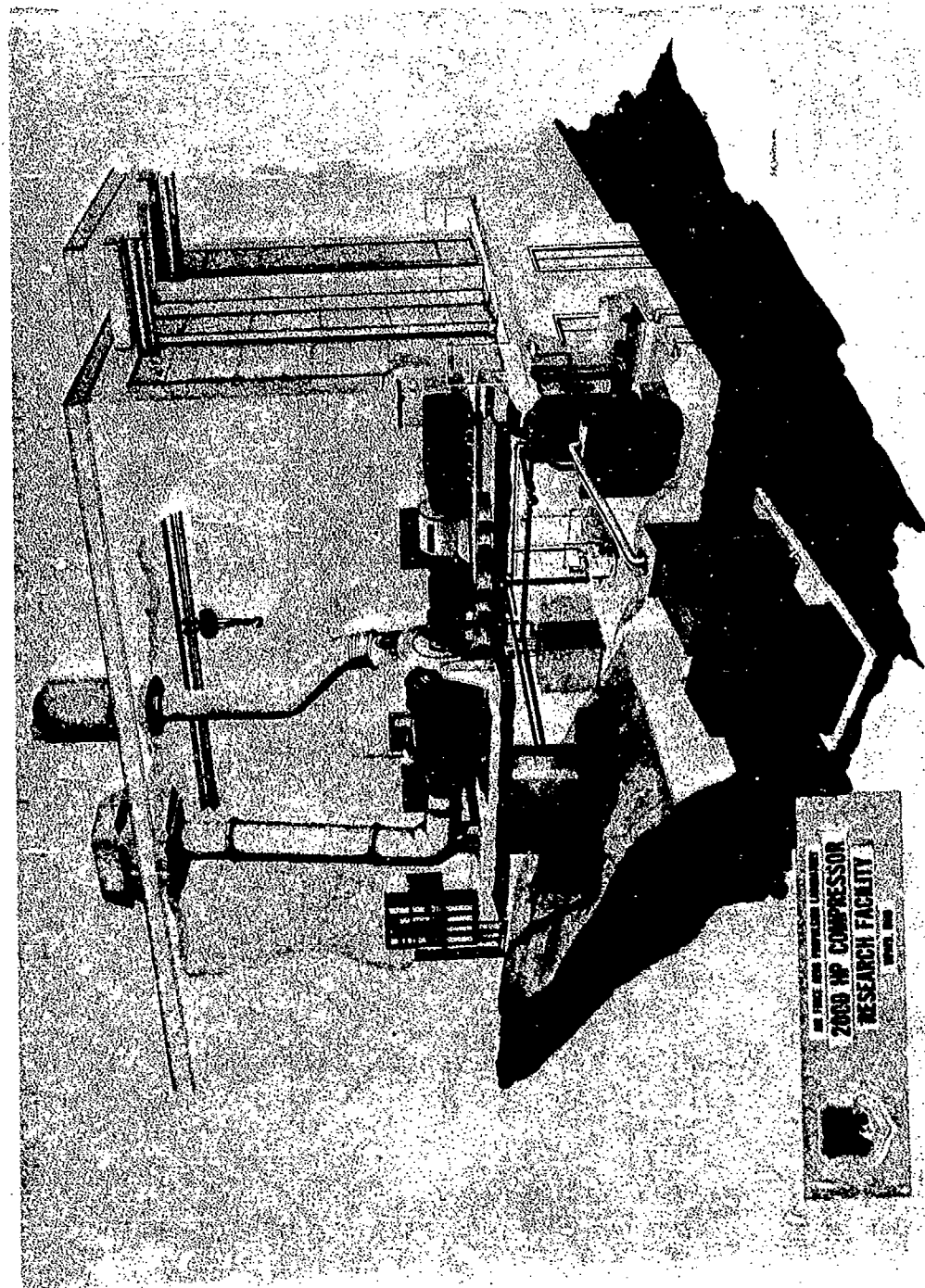


FIGURE 2. TEST FACILITY











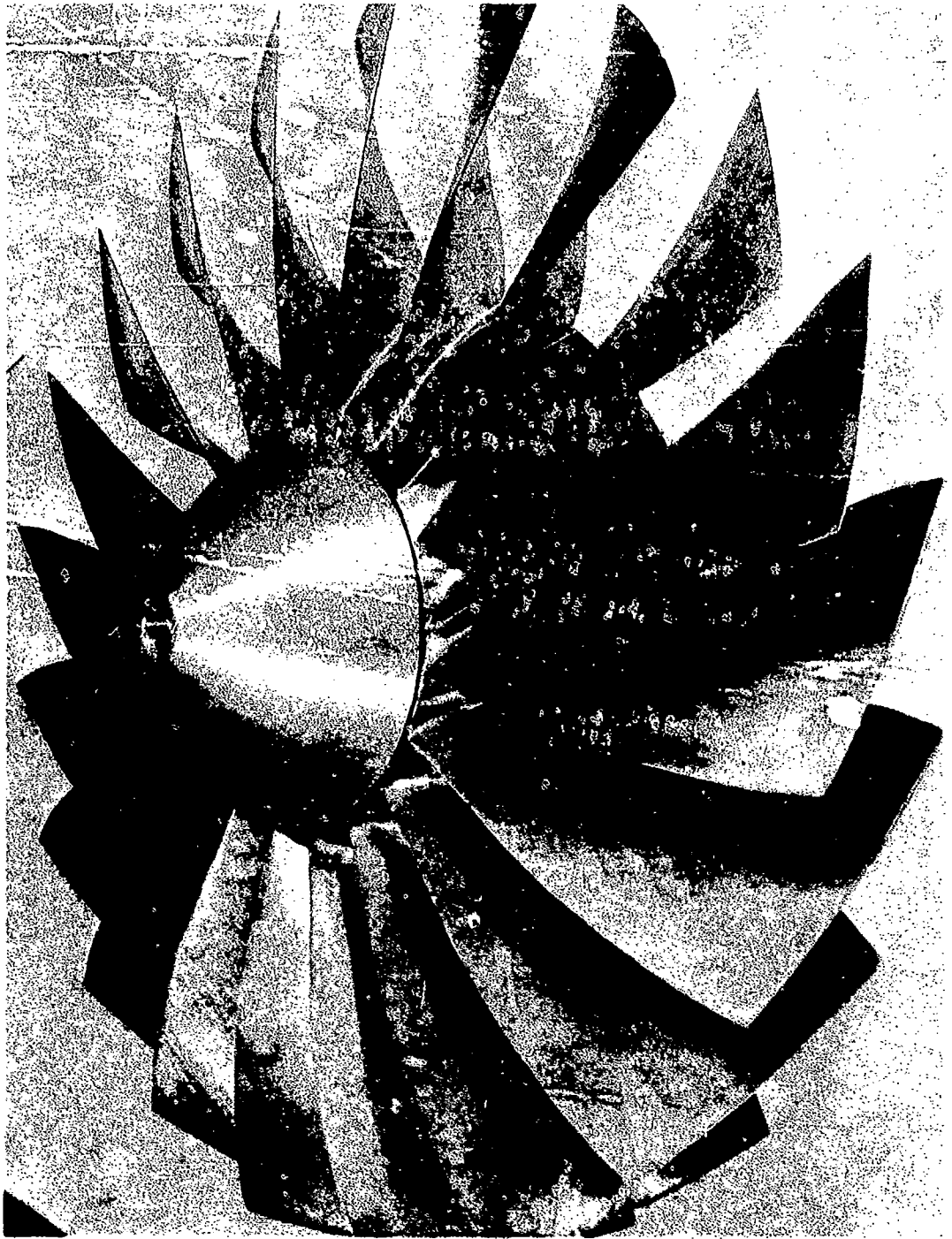


FIGURE 5. ROTOR ASSEMBLY





FIGURE 6. STATOR ASSEMBLY





FIGURE 7. ROTOR AND STATOR ASSEMBLED



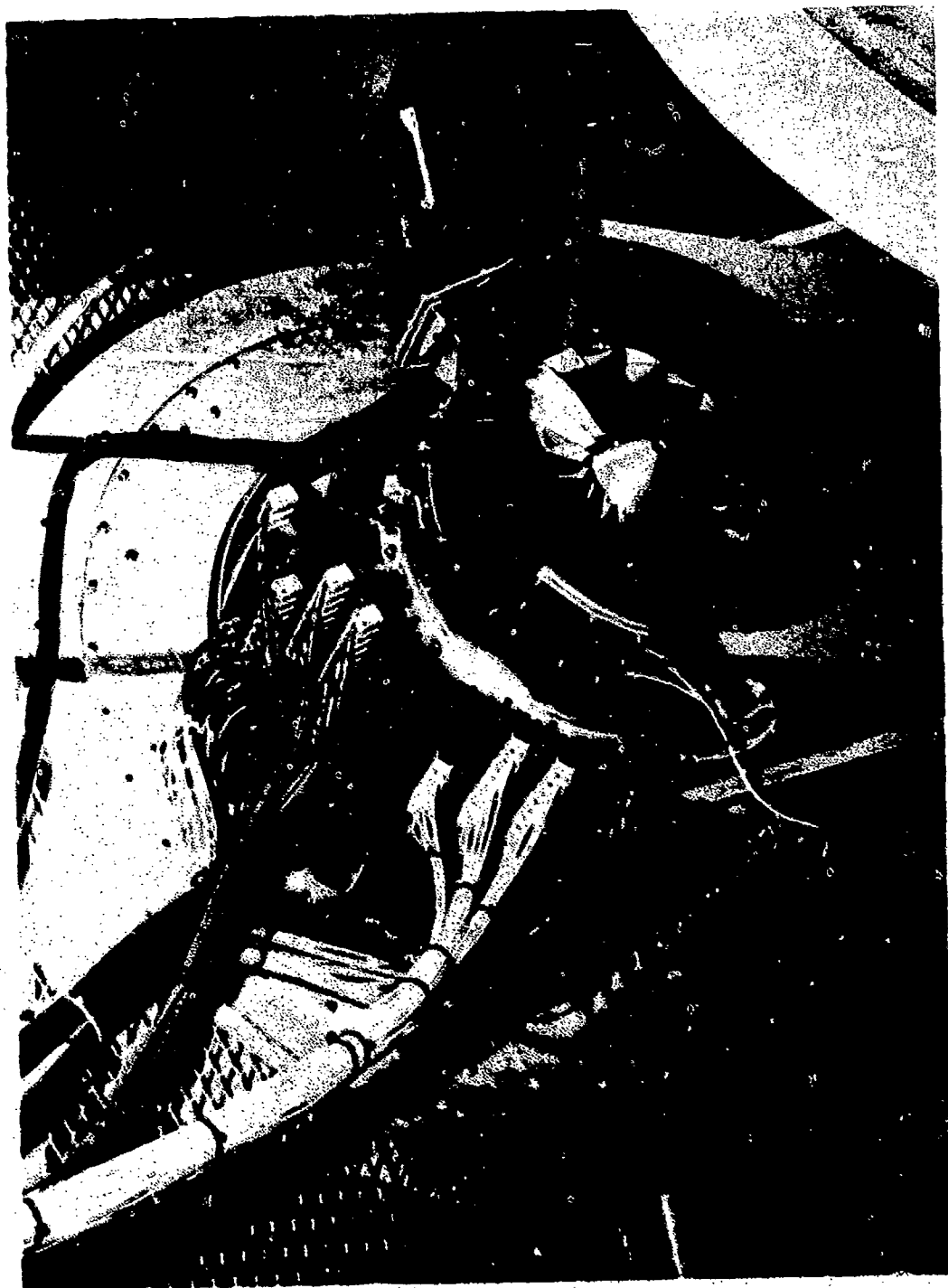


FIGURE 8. VEHICLE INSTRUMENTATION BULKHEAD



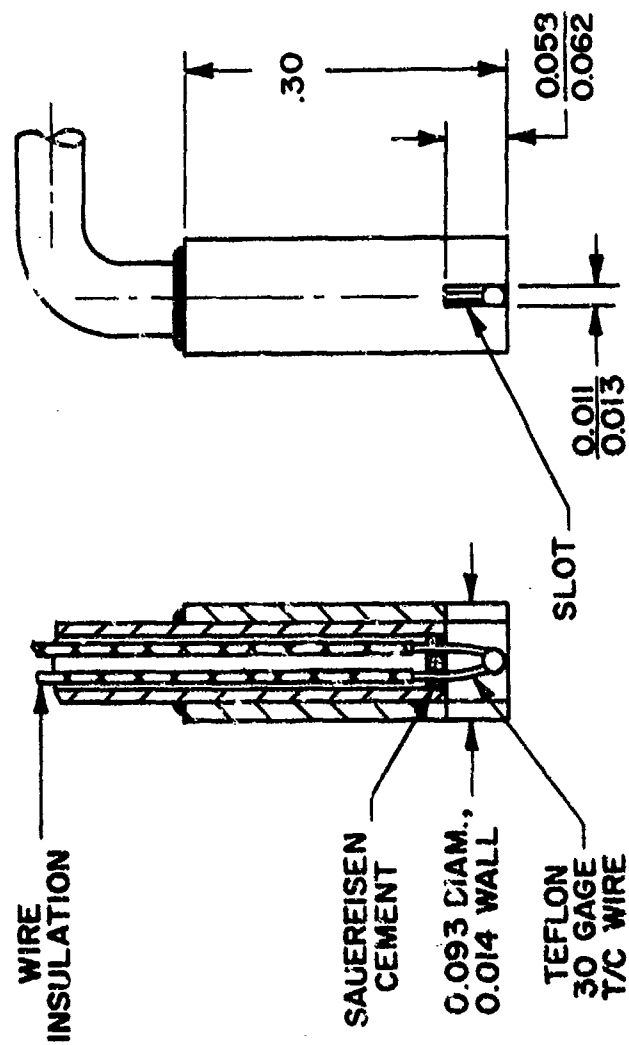


FIGURE 9. SLOT VENTED TEMPERATURE PROBE DESIGN



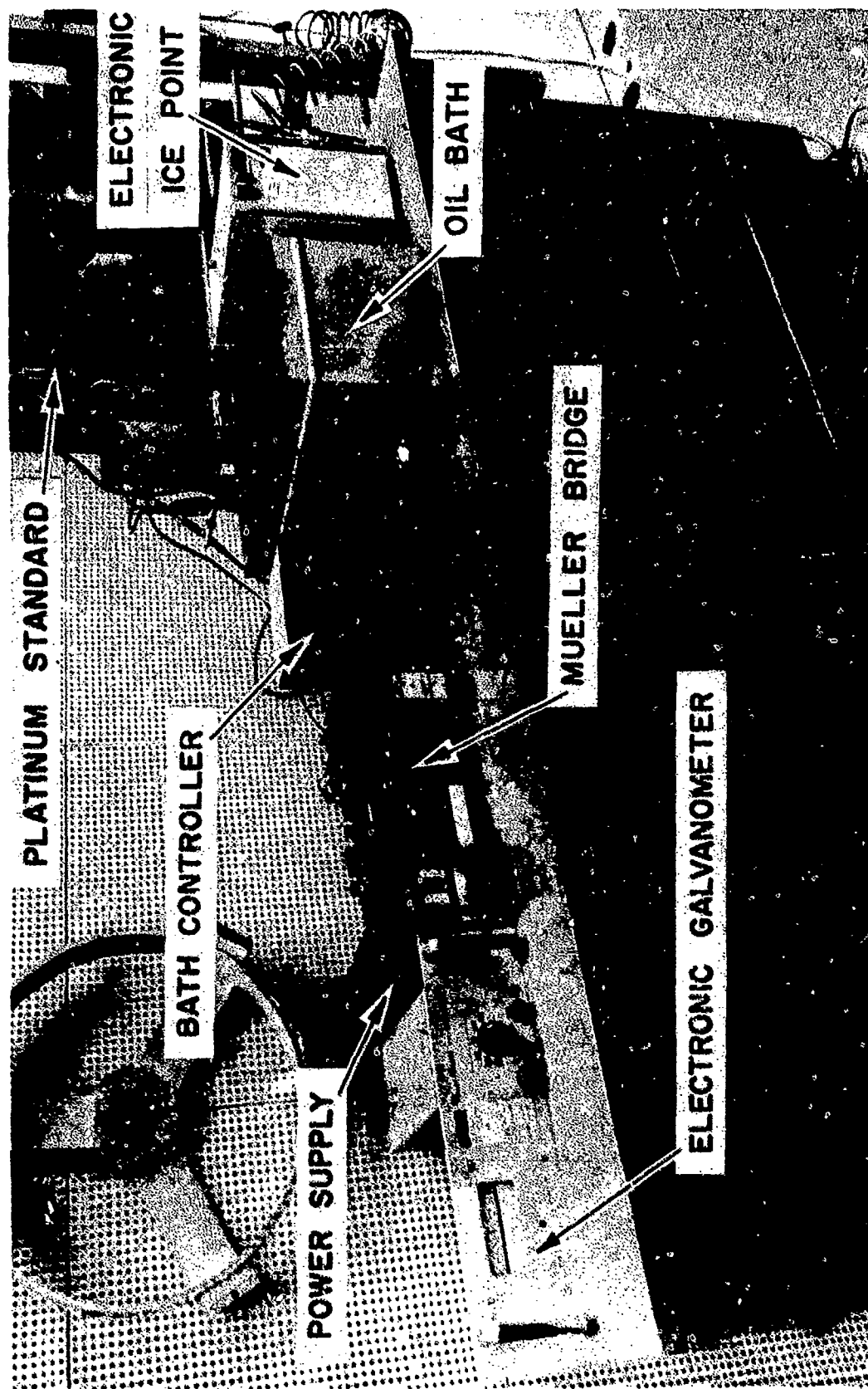


FIGURE 10. TEMPERATURE CALIBRATION SETUP



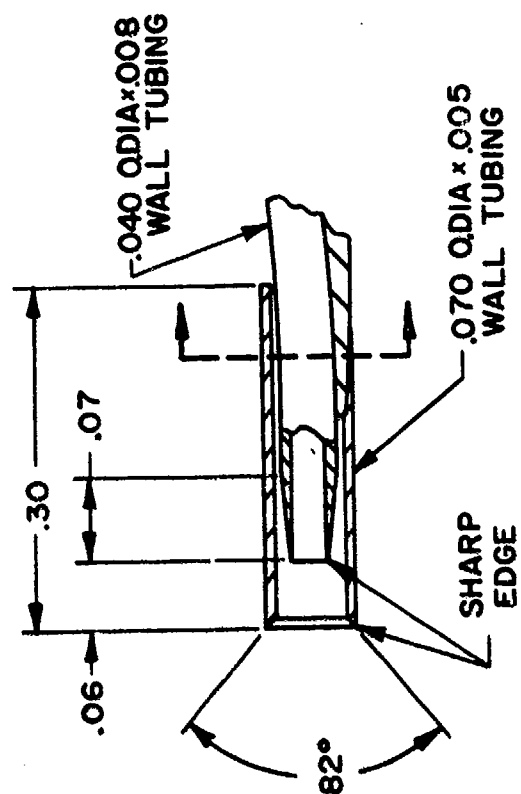


FIGURE 11. KIEL STAGNATION TUBE DESIGN



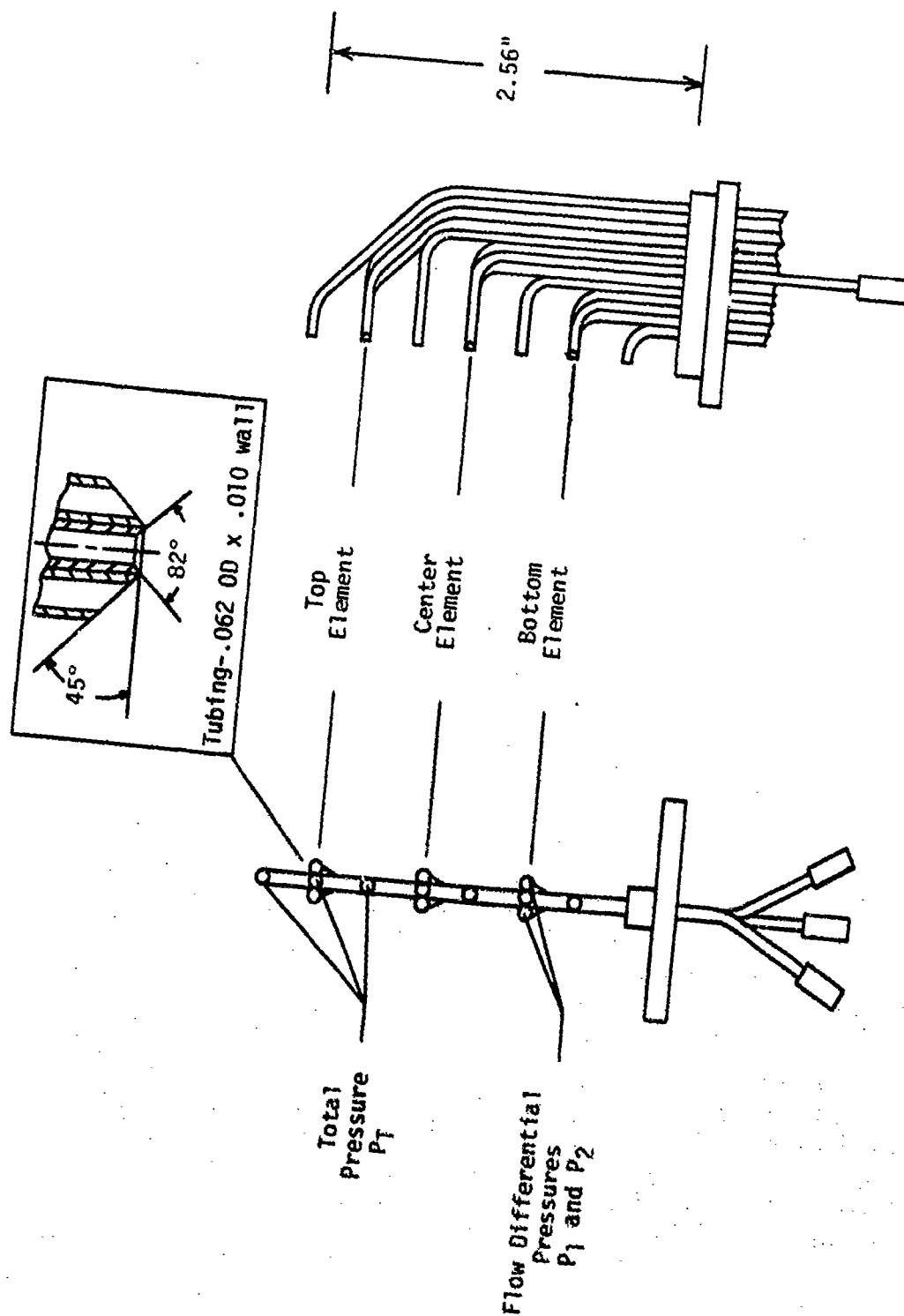


FIGURE 12. TOTAL PRESSURE AND YAW ANGLE MEASUREMENT RAKE DESIGN



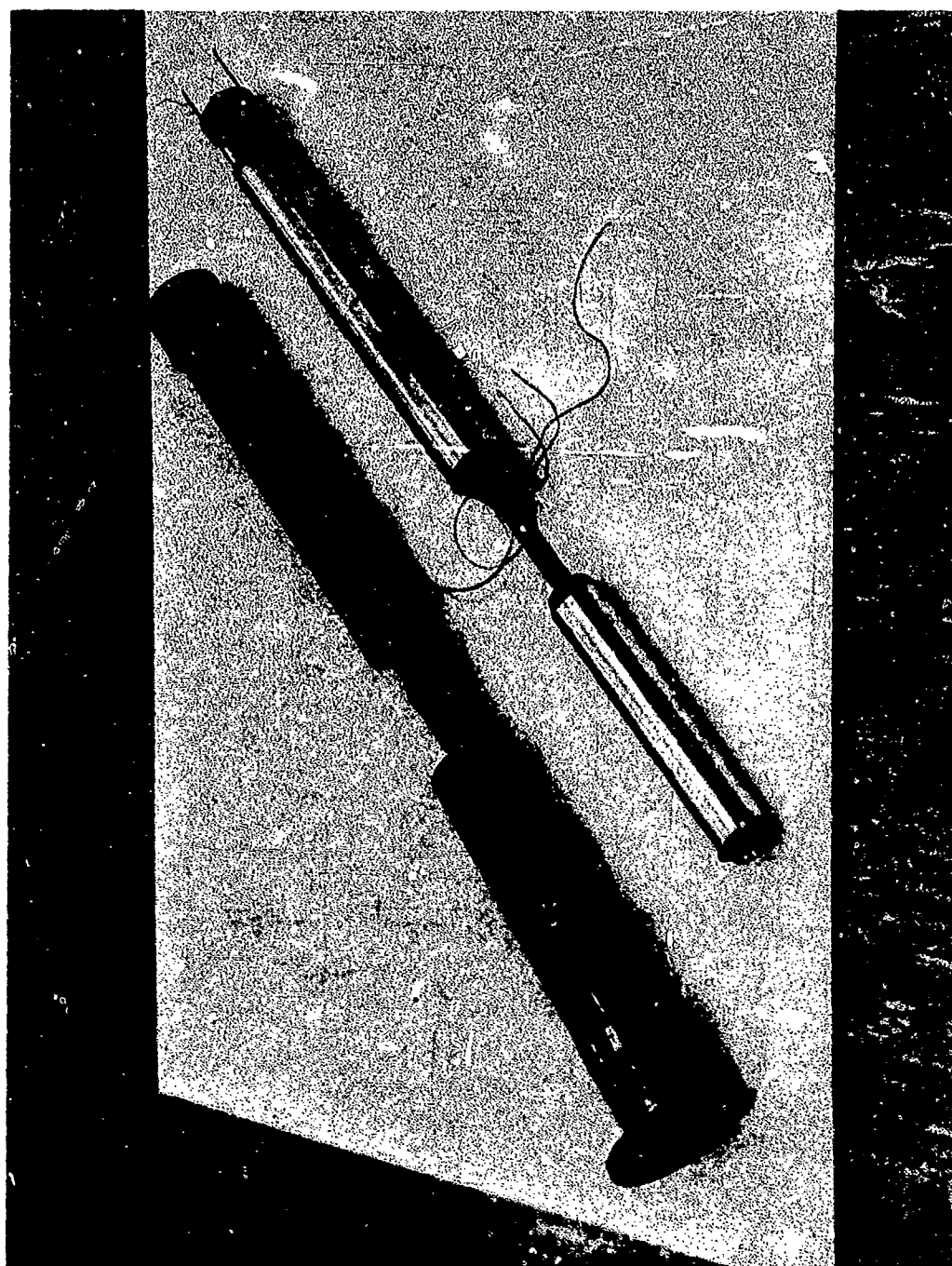


FIGURE 13. TELEMETRY CARRIER TUBES AND  
DRIVE SHAFTS





FIGURE 14. STRAIN GAGE FEMALE CONNECTOR AT  
AFT END OF ROTOR



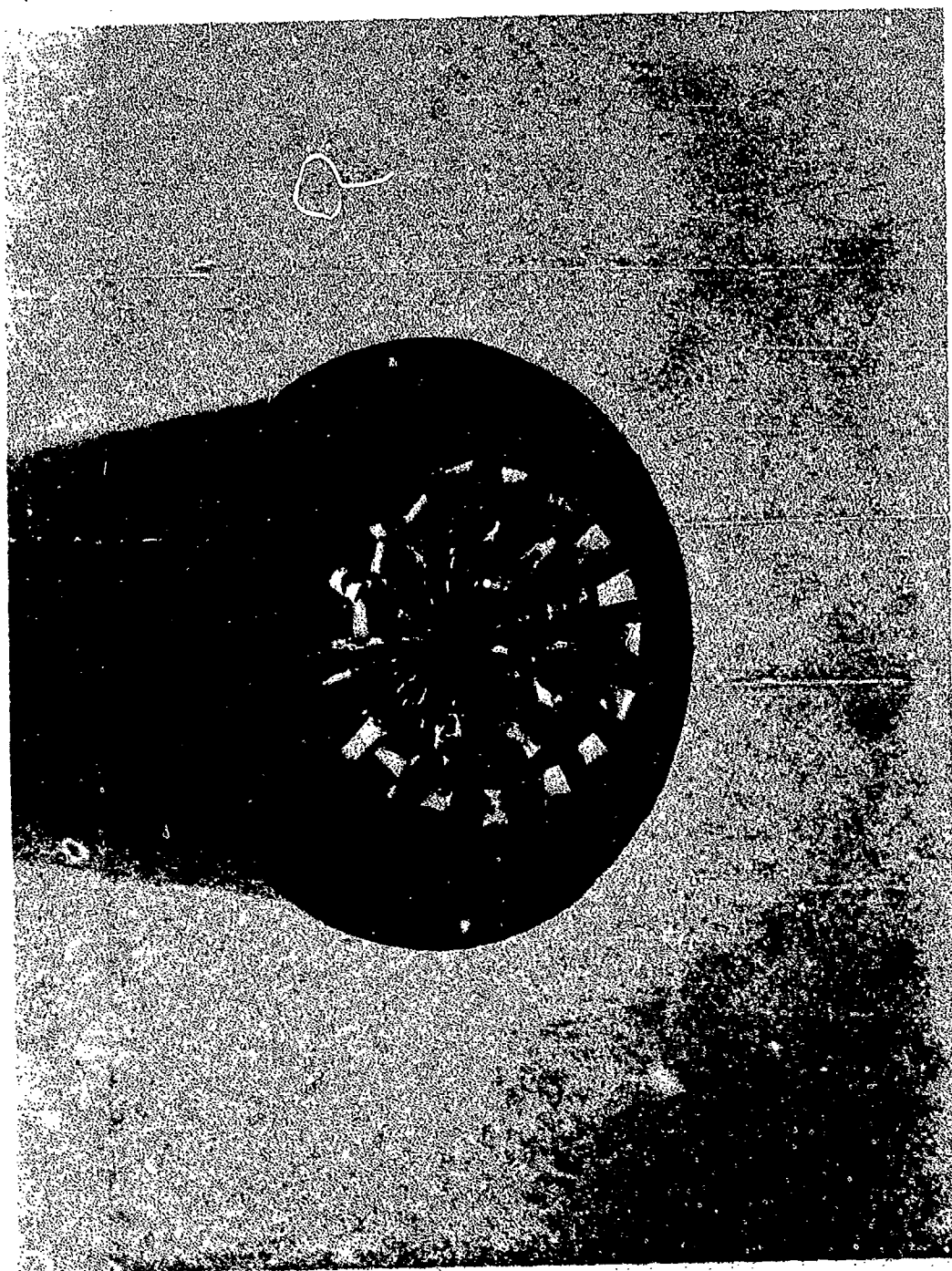


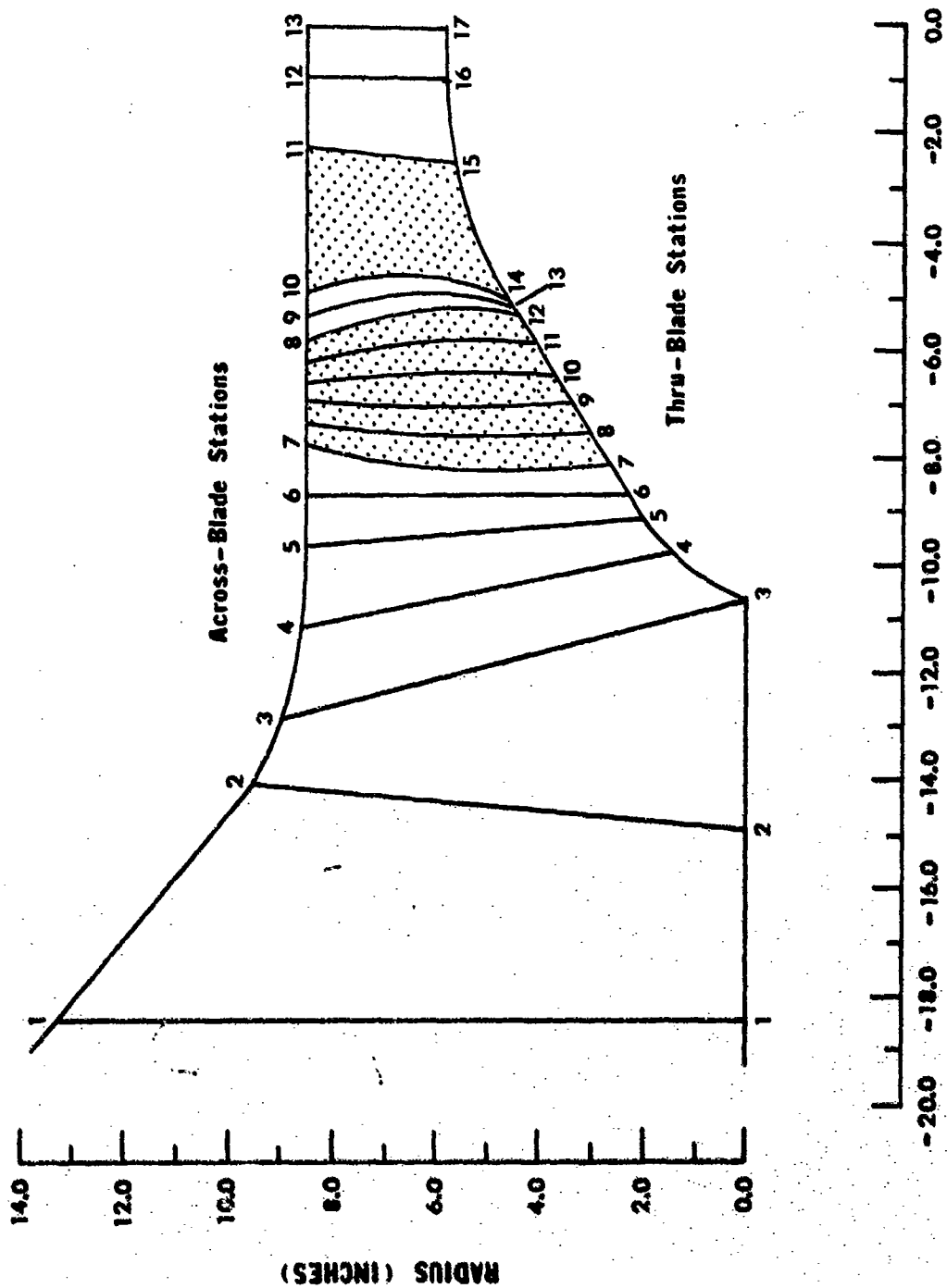
FIGURE 15. STRAIN GAGE MALE CONNECTOR AT  
FORWARD END OF TELEMTRY CARRIER





FIGURE 16. TYPICAL STRAIN GAGE APPLICATION





AXIAL COORDINATE (INCHES)

FIGURE 17. COMPRESSOR FLOW PATH WITH PHASE II ANALYSIS COMPUTING STATIONS



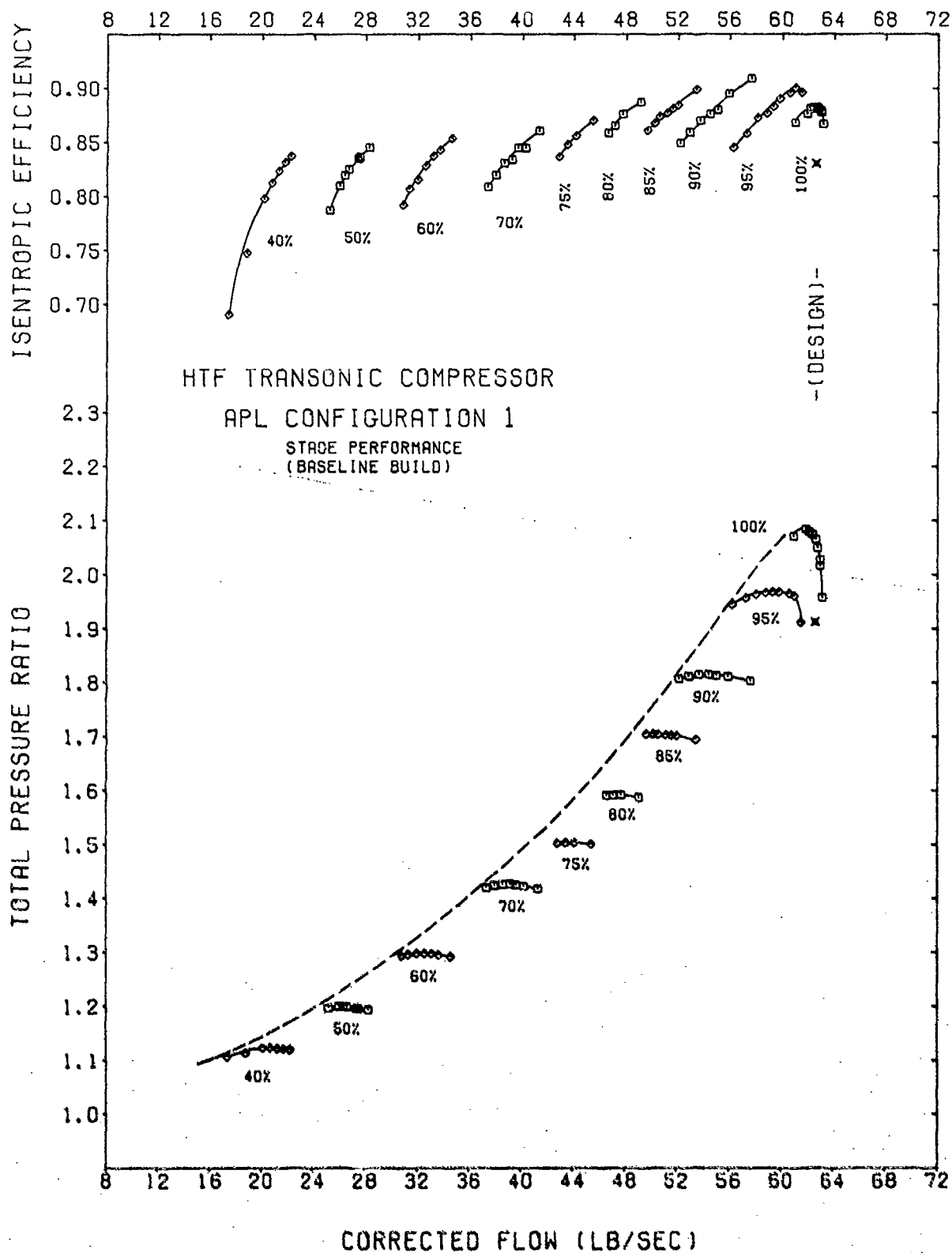


FIGURE 18. COMPRESSOR STAGE PERFORMANCE MAP



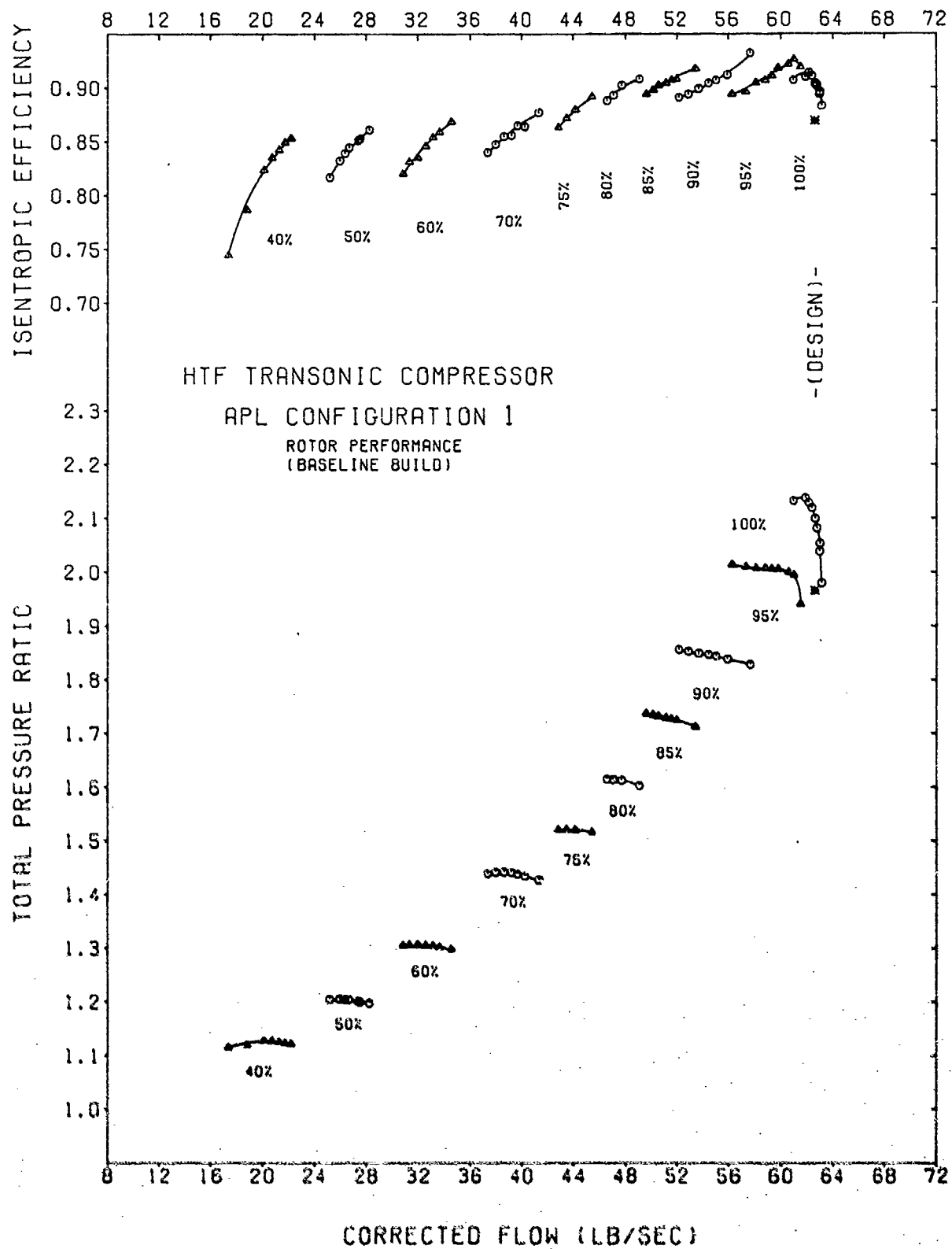


FIGURE 19. COMPRESSOR ROTOR PERFORMANCE MAP



TABLE V  
IDENTIFICATION OF SYMBOLS  
FOR 40%-SPEED ACROSS-BLADE FIGURES

TEST IDENTIFICATION	SYMBOL
510290706540	⌘
510290605040	⤴
510290504040	◊
510290403040	×
510290301540	+
510290200140	⚠
510290100040	⓪



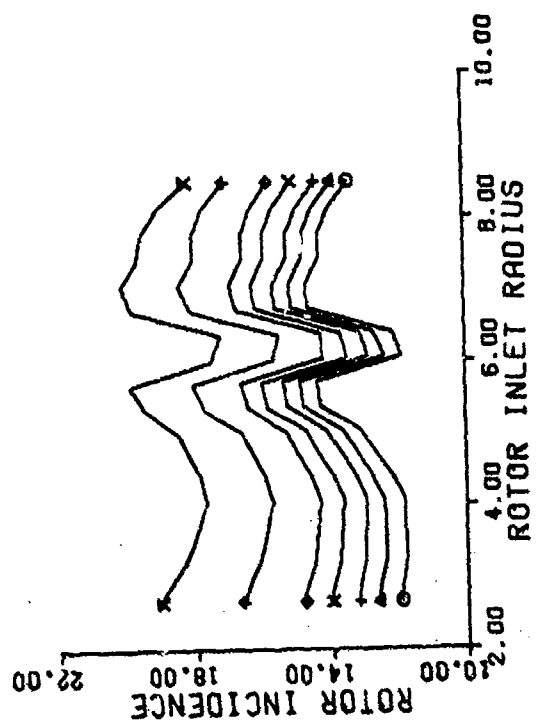


FIGURE 21 ROTOR INCIDENCE VS INLET RADIUS  
(40% SPEED)

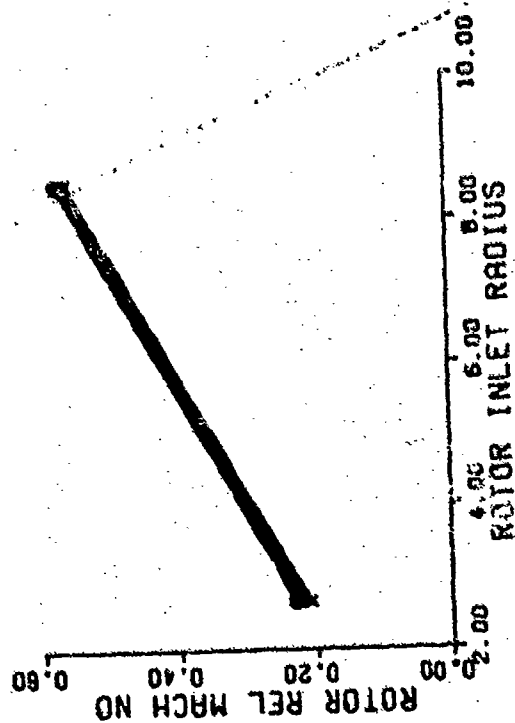


FIGURE 20 ROTOR RELATIVE MACH NUMBER  
VS INLET RADIUS (40% SPEED)



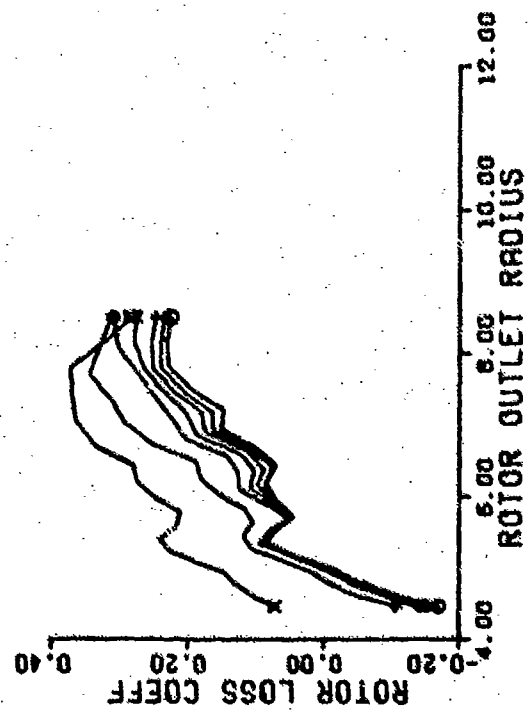


FIGURE 22 ROTOR LOSS COEFFICIENT VS  
OUTLET RADIUS (40% SPEED)

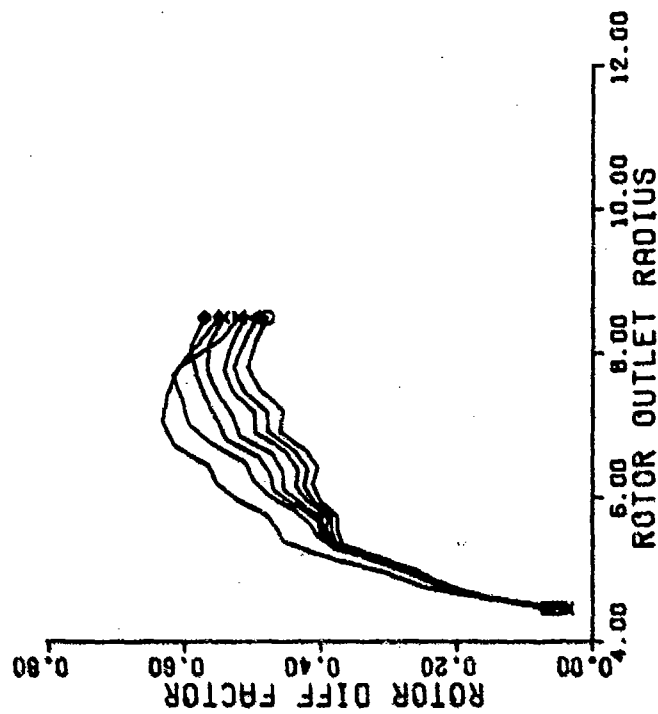


FIGURE 23 ROTOR DIFFUSION FACTOR VS  
OUTLET RADIUS (40% SPEED)



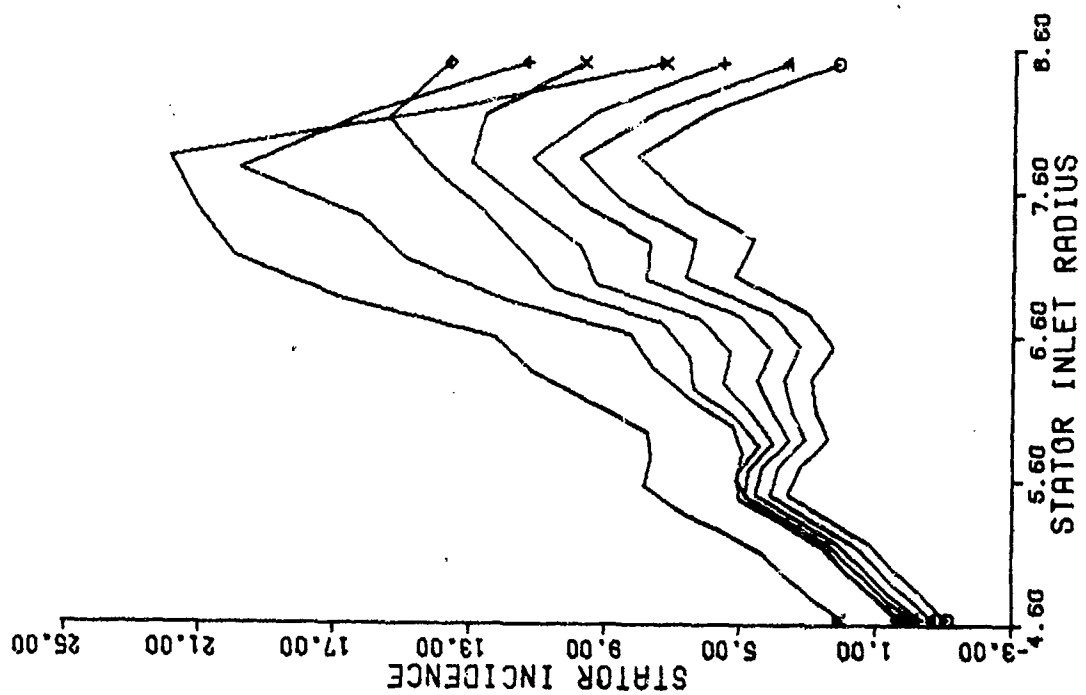


FIGURE 25 STATOR INCIDENCE VS INLET RADIUS (40% SPEED)

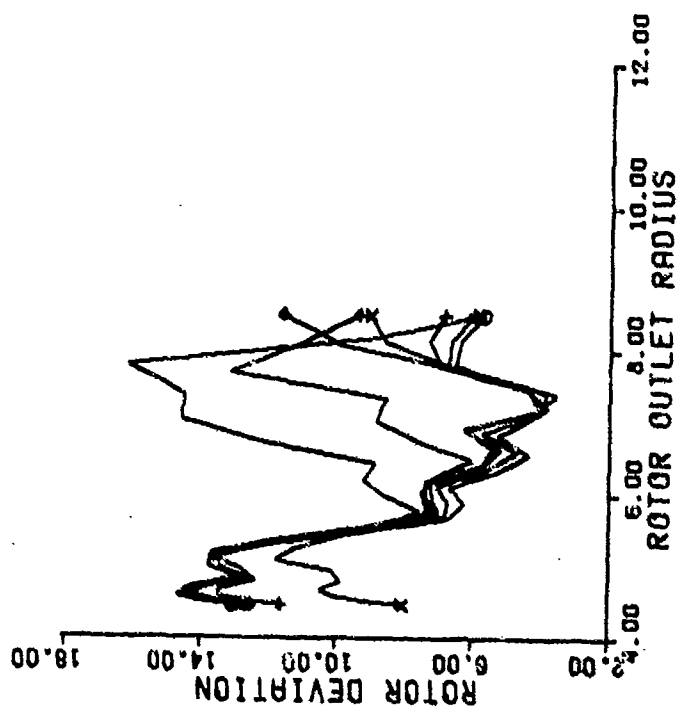


FIGURE 24 ROTOR DEVIATION VS OUTLET RADIUS (40% SPEED)



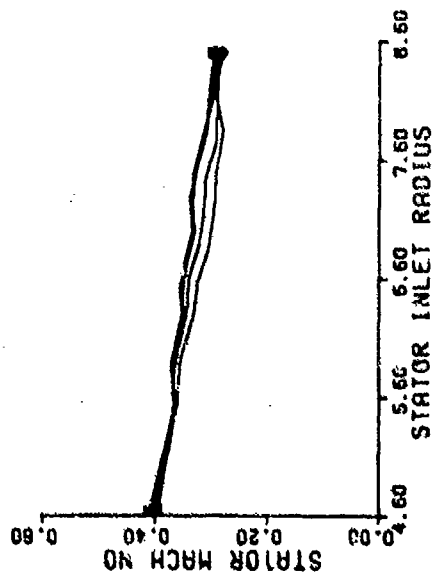


FIGURE 26 STATOR MACH NUMBER VS INLET RADIUS (40% SPEED)

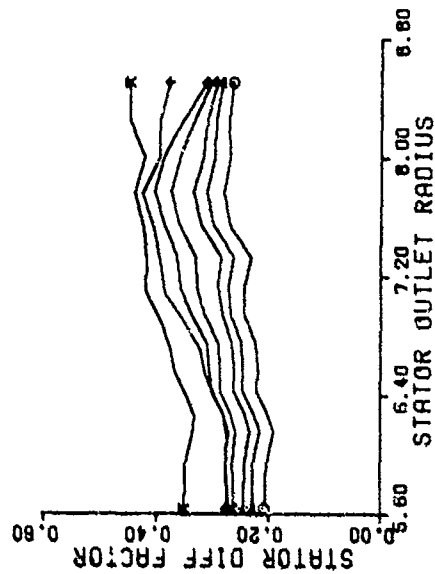


FIGURE 27 STATOR DIFFUSION FACTOR VS OUTLET RADIUS (40% SPEED)

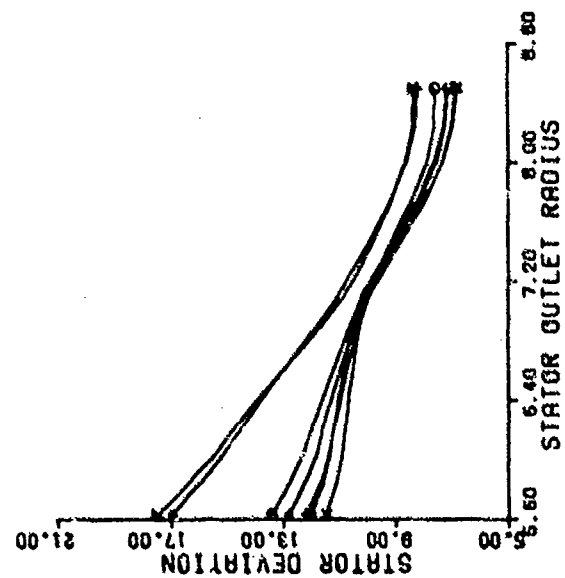


FIGURE 28 STATOR DEVIATION VS OUTLET RADIUS (40% SPEED)

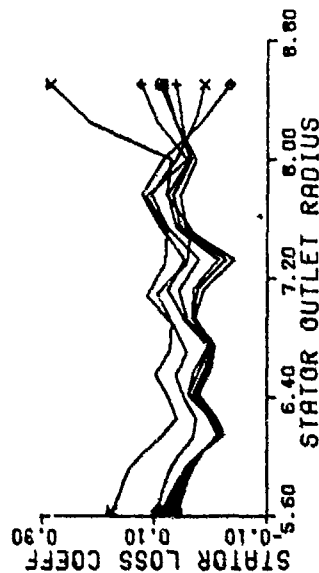


FIGURE 29 STATOR LOSS COEFFICIENT VS OUTLET RADIUS (40% SPEED)



TABLE VI

IDENTIFICATION OF SYMBOLS  
FOR 50%-SPEED ACROSS-BLADE FIGURES

TEST IDENTIFICATION	SYMBOL
511250504450	✕
511250303550	⤴
511250102350	◊
510291302850	✕
510291001050	+
510290900150	Δ
510290800050	⊙



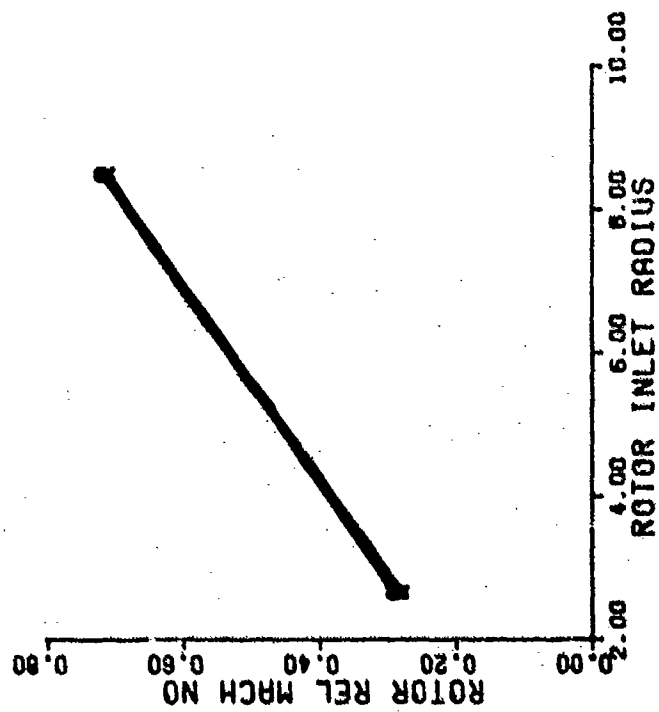


FIGURE 30 ROTOR RELATIVE MACH NUMBER  
VS INLET RADIUS (50% SPEED)

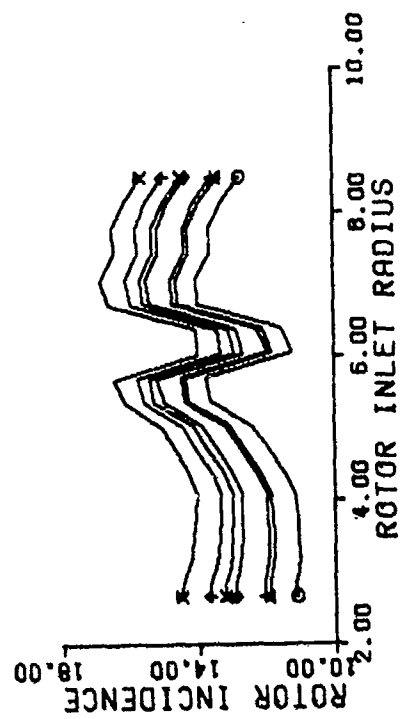


FIGURE 31 ROTOR INCIDENCE VS INLET  
RADIUS (50% SPEED)



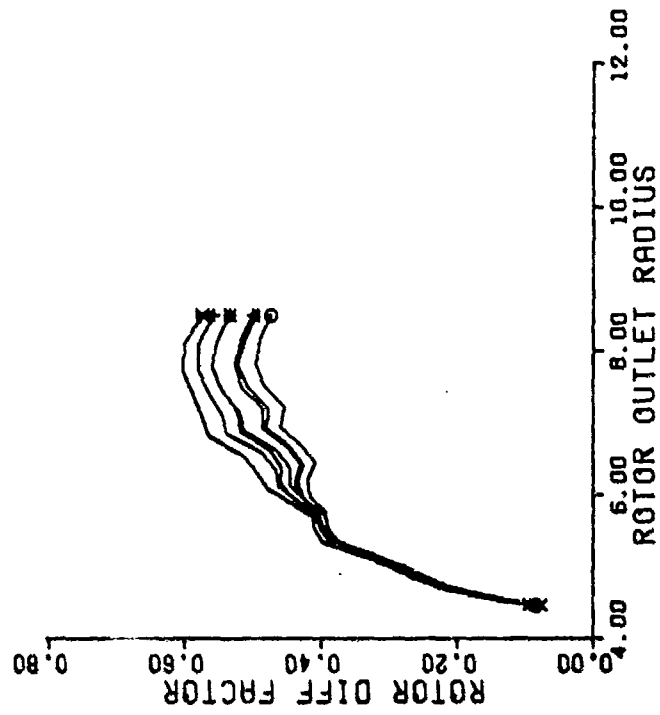


FIGURE 33 ROTOR DIFFUSION FACTOR VS  
OUTLET RADIUS (50% SPEED)

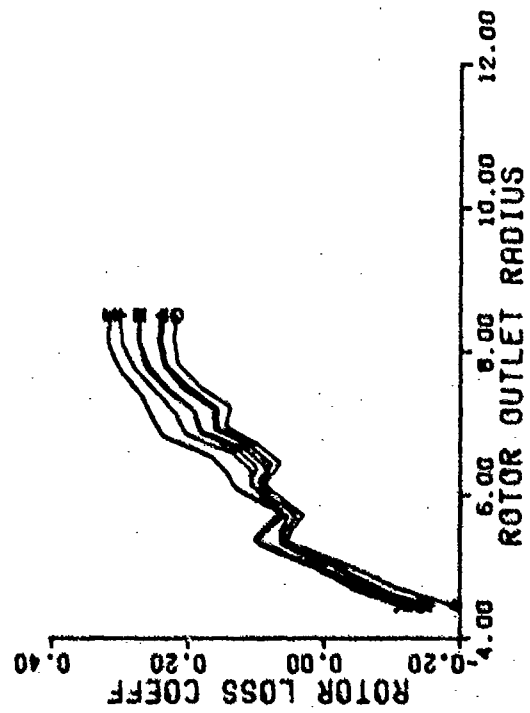


FIGURE 32 ROTOR LOSS COEFFICIENT VS  
OUTLET RADIUS (50% SPEED)



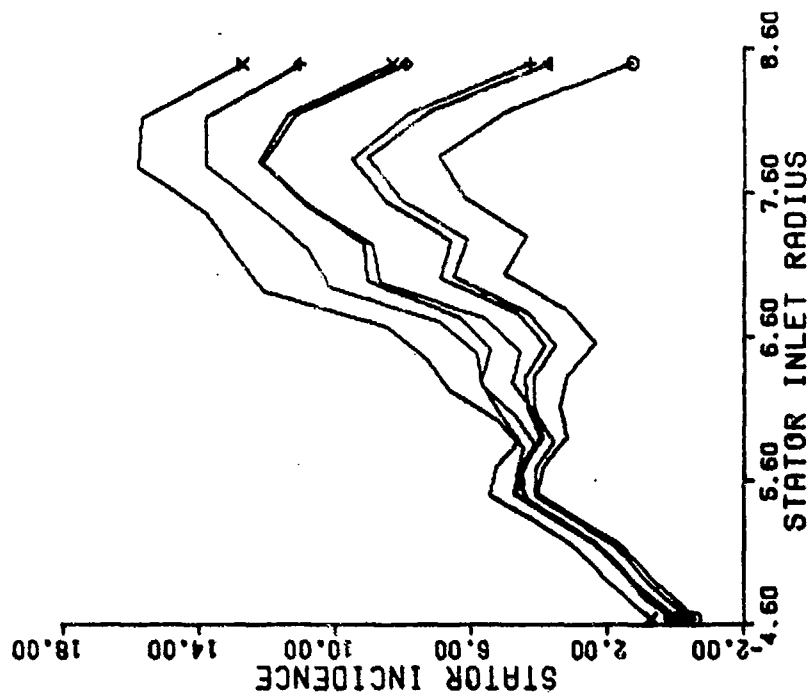


FIGURE 35 STATOR INCIDENCE VS INLET RADIUS (50% SPEED)

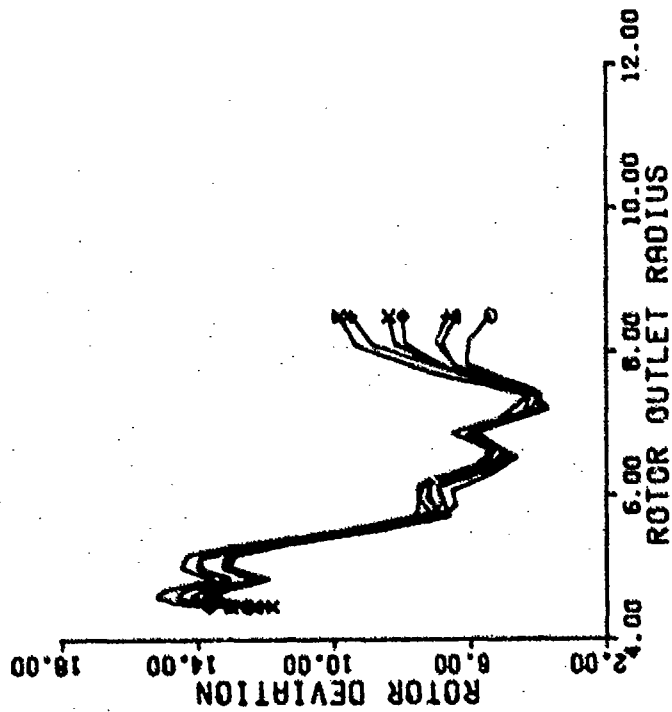


FIGURE 34 ROTOR DEVIATIONS VS OUTLET RADIUS (50% SPEED)



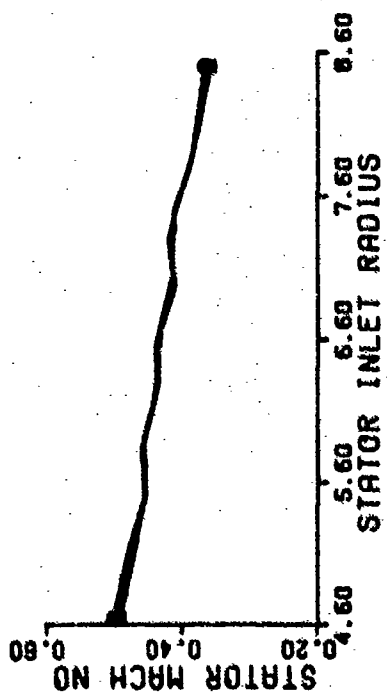


FIGURE 36 STATOR MACH NUMBER VS INLET RADIUS (50% SPEED)

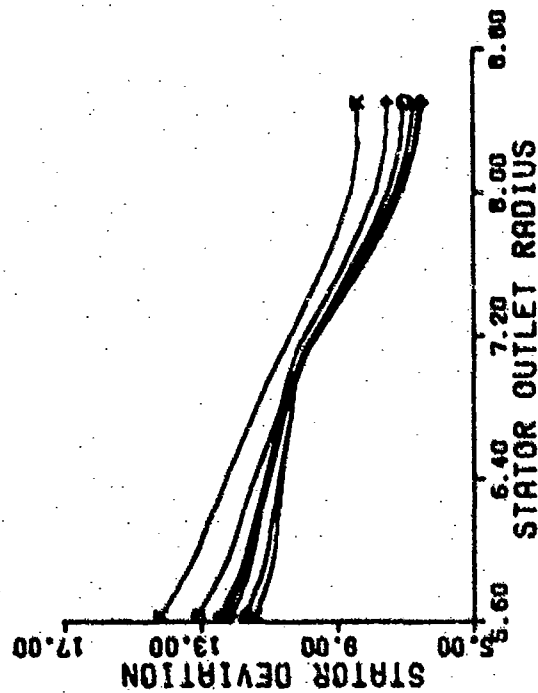


FIGURE 38 STATOR DEVIATION VS OUTLET RADIUS (50% SPEED)

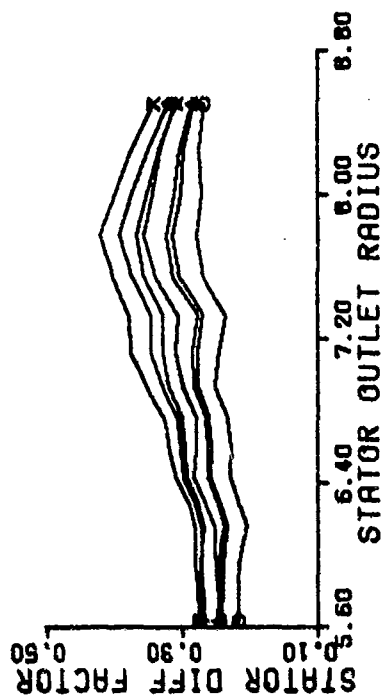


FIGURE 37 STATOR DIFFUSION FACTOR VS OUTLET RADIUS (50% SPEED)

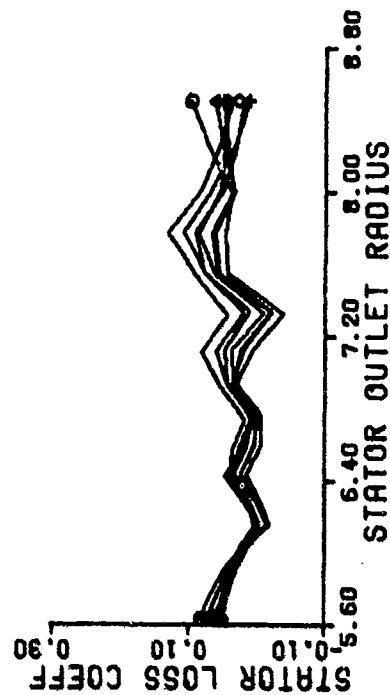


FIGURE 39 STATOR LOSS COEFFICIENT VS OUTLET RADIUS (50% SPEED)



TABLE VII

IDENTIFICATION OF SYMBOLS  
FOR 60%-SPEED ACROSS-BLADE FIGURES

TEST IDENTIFICATION	SYMBOL
511251204060	⌘
511251103660	⬆
511251003060	⬥
511250902360	×
511250801560	+
511250700260	⬤
511250600060	⊙



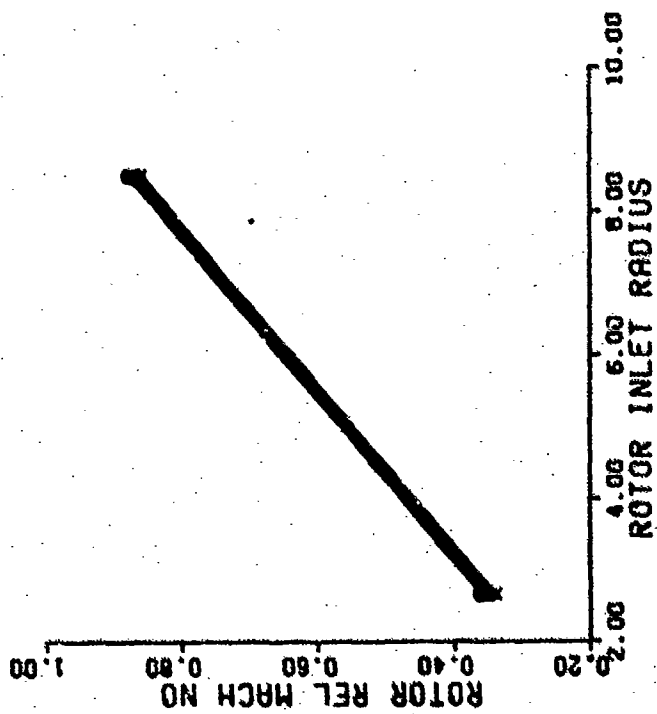


FIGURE 40 ROTOR RELATIVE MACH NUMBER  
VS INLET RADIUS (60% SPEED)

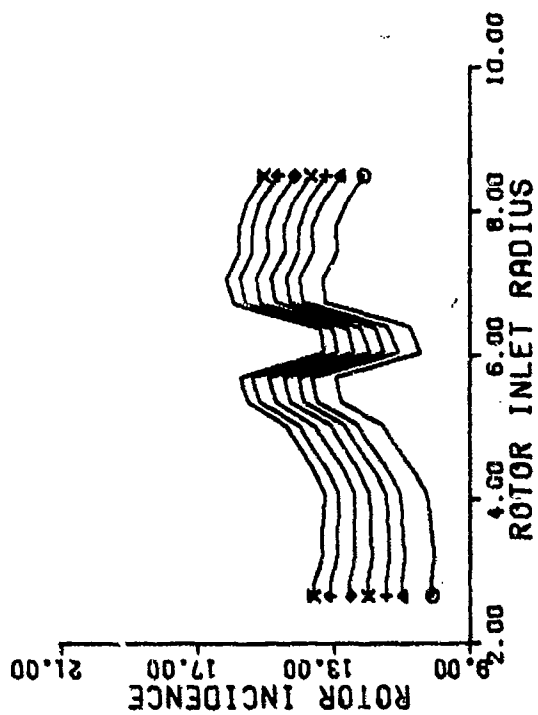


FIGURE 41 ROTOR INCIDENCE VS INLET  
RADIUS (60% SPEED)



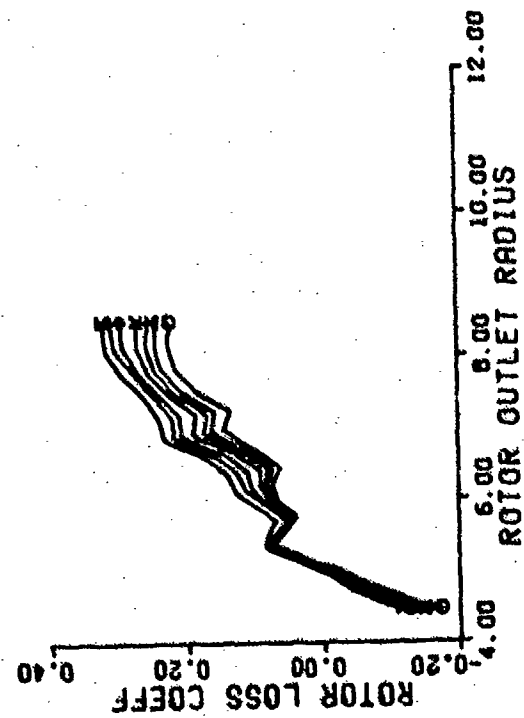


FIGURE 42 ROTOR LOSS COEFFICIENT VS  
OUTLET RADIUS (60% SPEED)

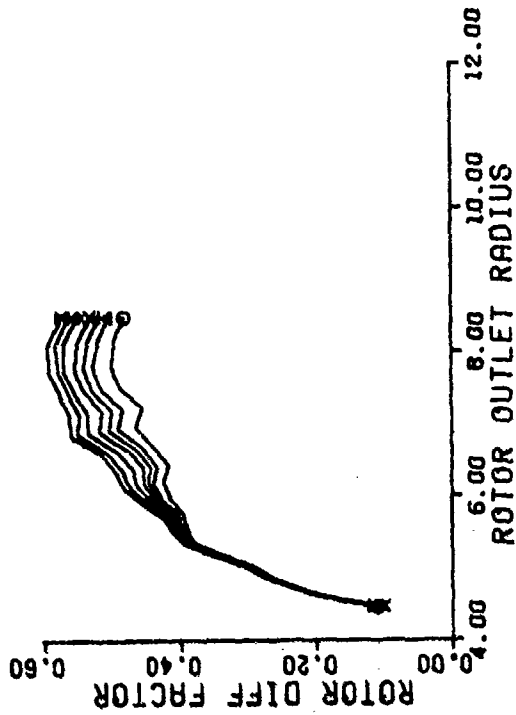


FIGURE 43 ROTOR DIFFUSION FACTOR VS  
OUTLET RADIUS (60% SPEED)



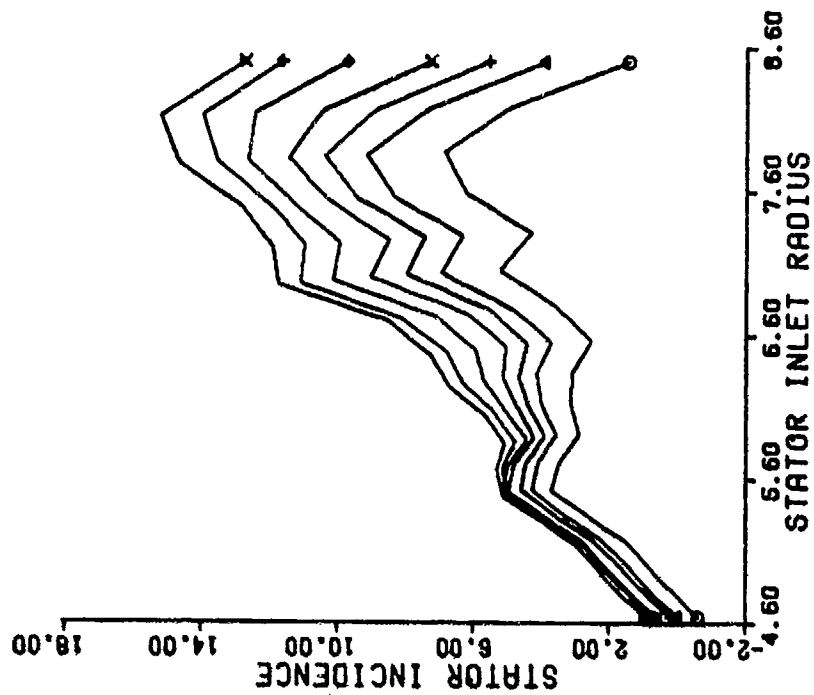


FIGURE 45 STATOR INCIDENCE VS INLET RADIUS (60% SPEED)

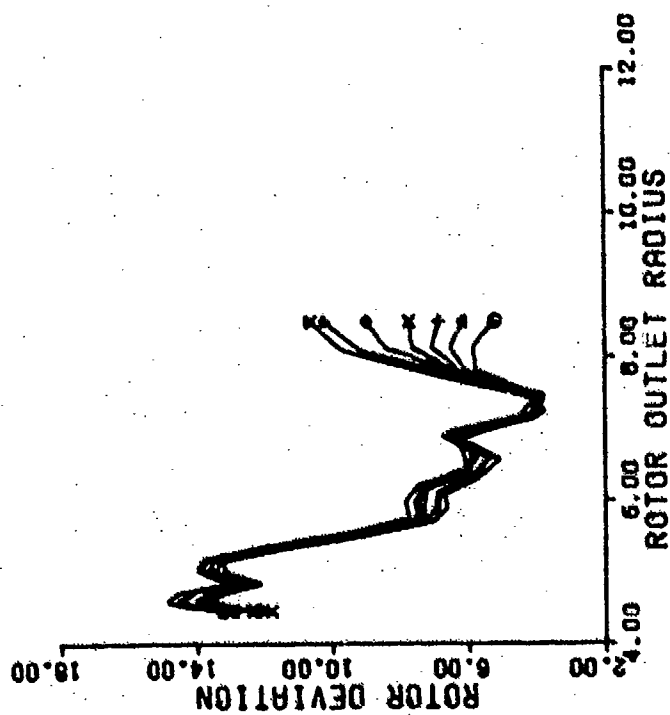


FIGURE 44 ROTOR DEVIATION VS OUTLET RADIUS (60% SPEED)



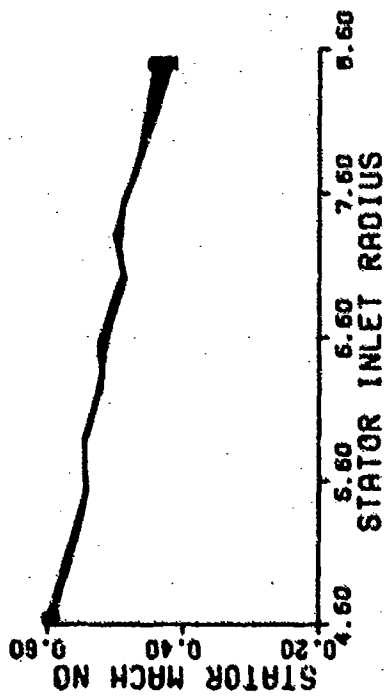


FIGURE 45 STATOR MACH NUMBER VS  
INLET RADIUS (60% SPEED)

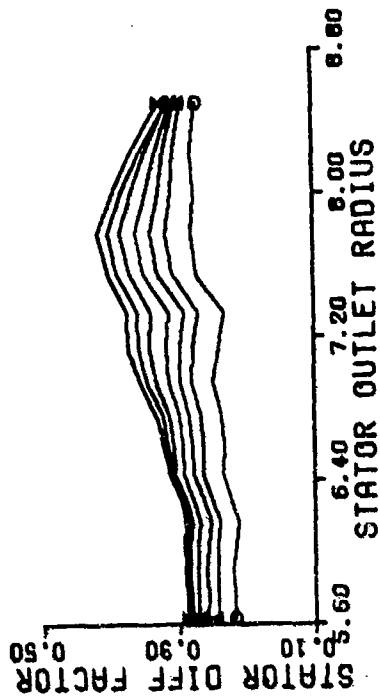


FIGURE 47 STATOR DIFFUSION FACTOR VS  
OUTLET RADIUS (60% SPEED)



FIGURE 48 STATOR DEVIATION VS OUTLET  
RADIUS (60% SPEED)

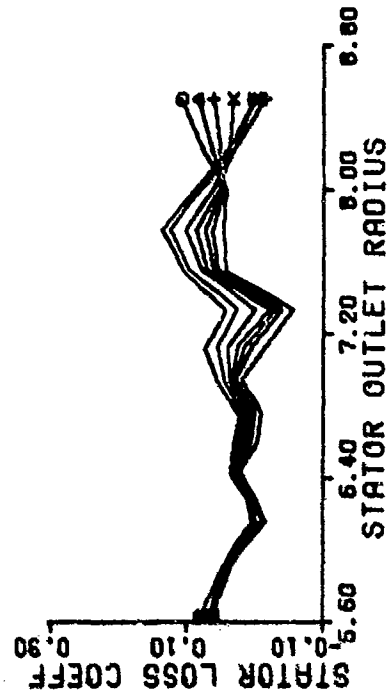


FIGURE 49 STATOR LOSS COEFFICIENT VS  
OUTLET RADIUS (60% SPEED)



TABLE VIII

IDENTIFICATION OF SYMBOLS  
FOR 70%-SPEED ACROSS-BLADE FIGURES

TEST IDENTIFICATION	SYMBOL
511260703570	⌘
511260603317	↑
511260502670	◊
511260402070	×
511260301470	+
511260200270	△
511260100070	⊙



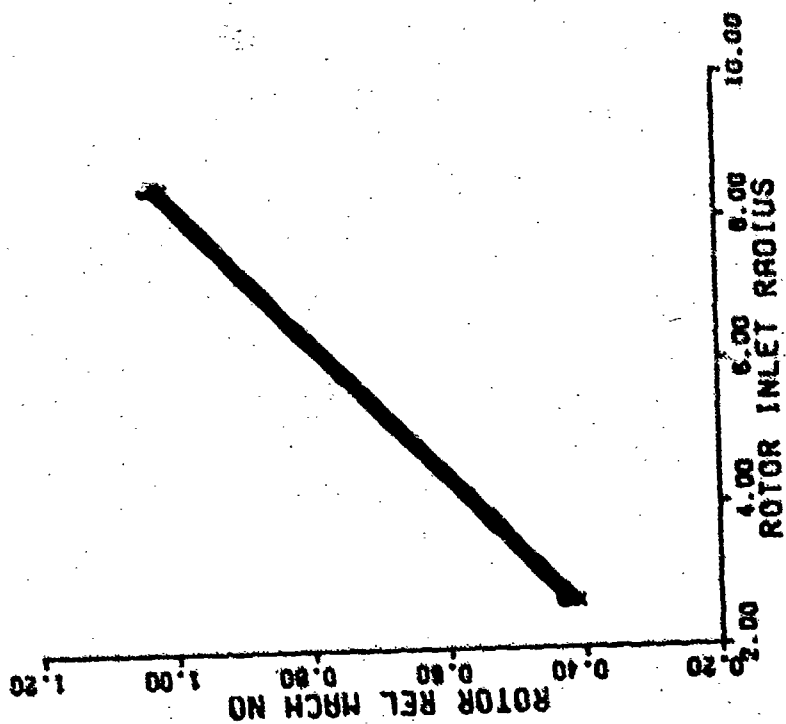


FIGURE 50 ROTOR RELATIVE MACH NUMBER  
VS INLET RADIUS (70% SPEED)

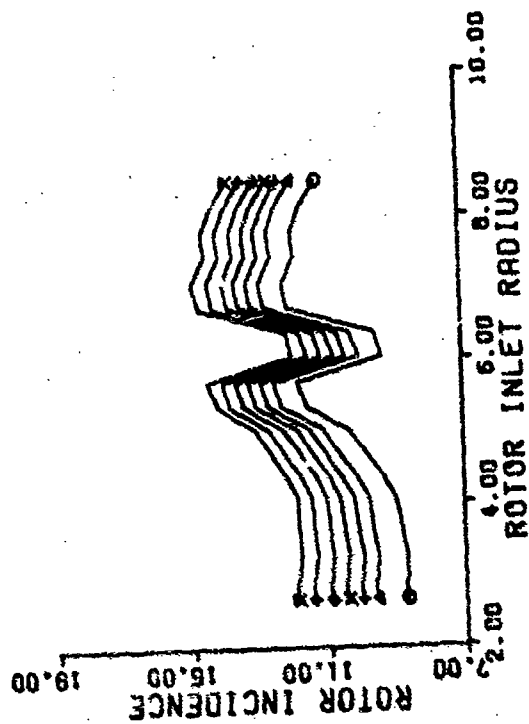


FIGURE 51 ROTOR INCIDENCE VS INLET  
RADIUS (70% SPEED)



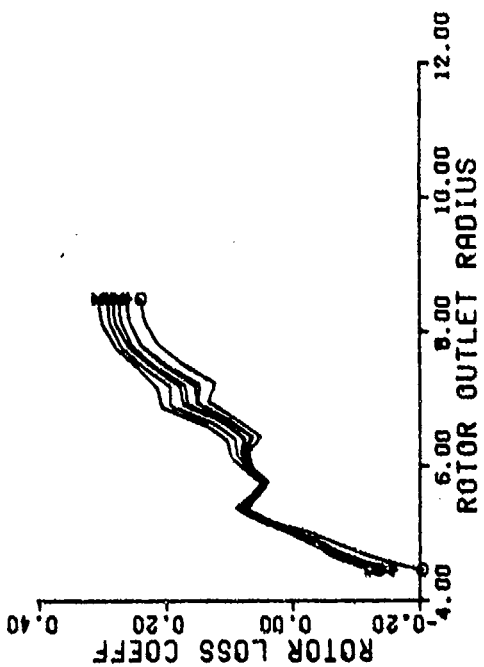


FIGURE 52 ROTOR LOSS COEFFICIENT VS  
OUTLET RADIUS (70% SPEED)

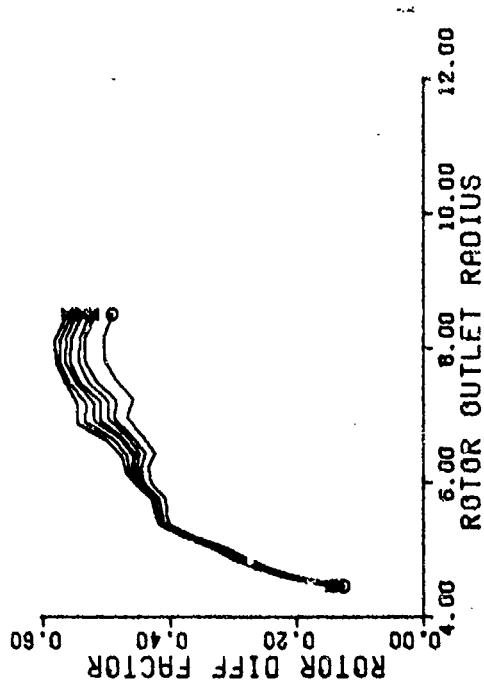


FIGURE 53 ROTOR DIFFUSION FACTOR VS  
OUTLET RADIUS (70% SPEED)



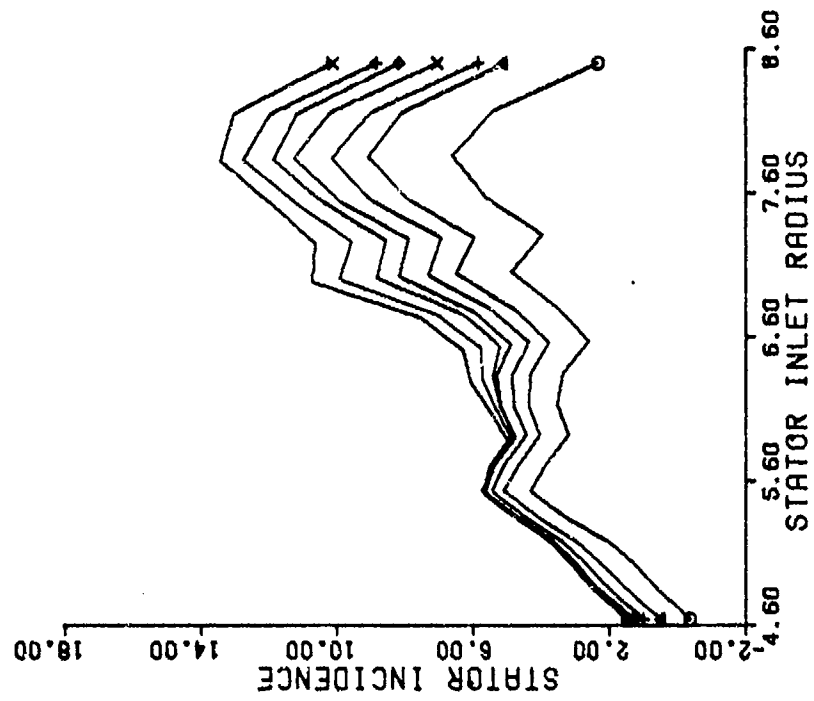


FIGURE 55 STATOR INCIDENCE VS INLET RADIUS (70% SPEED)

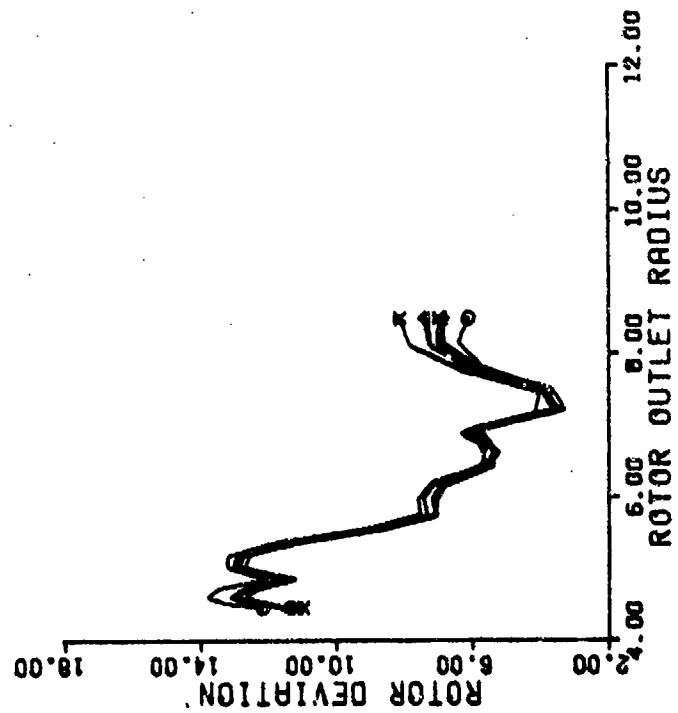


FIGURE 54 ROTOR DEVIATION VS OUTLET RADIUS (70% SPEED)



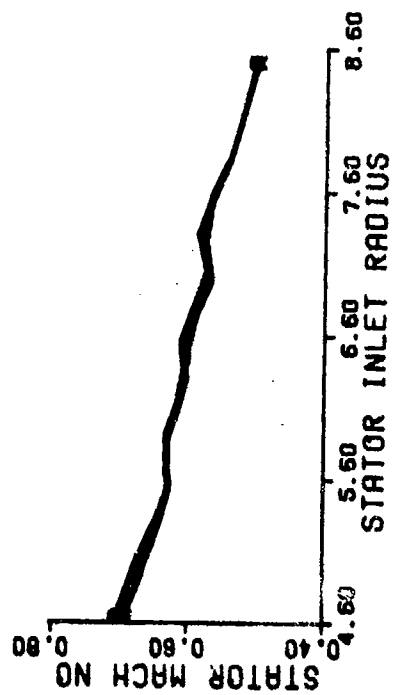


FIGURE 56 STATOR MACH NUMBER VS  
INLET RADIUS (70% SPEED)

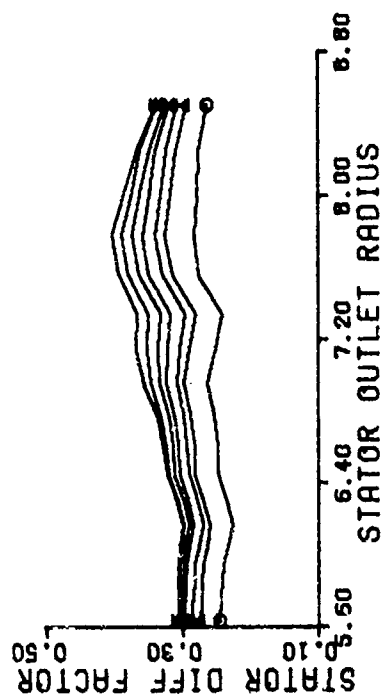


FIGURE 57 STATOR DIFFUSION FACTOR VS  
OUTLET RADIUS (70% SPEED)

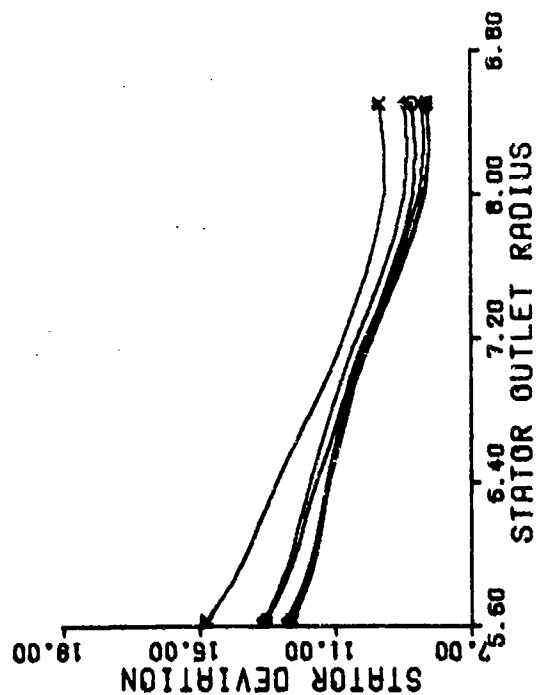


FIGURE 58 STATOR DEVIATION VS OUTLET  
RADIUS (70% SPEED)

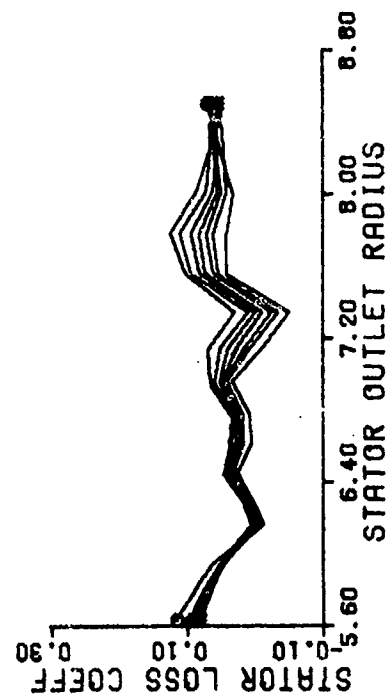


FIGURE 59 STATOR LOSS COEFFICIENT VS  
OUTLET RADIUS (70% SPEED)



TABLE IX

IDENTIFICATION OF SYMBOLS  
FOR 75%-SPEED ACROSS-BLADE FIGURES

TEST IDENTIFICATION	SYMBOL
601290401875	X
601290301275	+
601290200275	Δ
601290100075	⊖



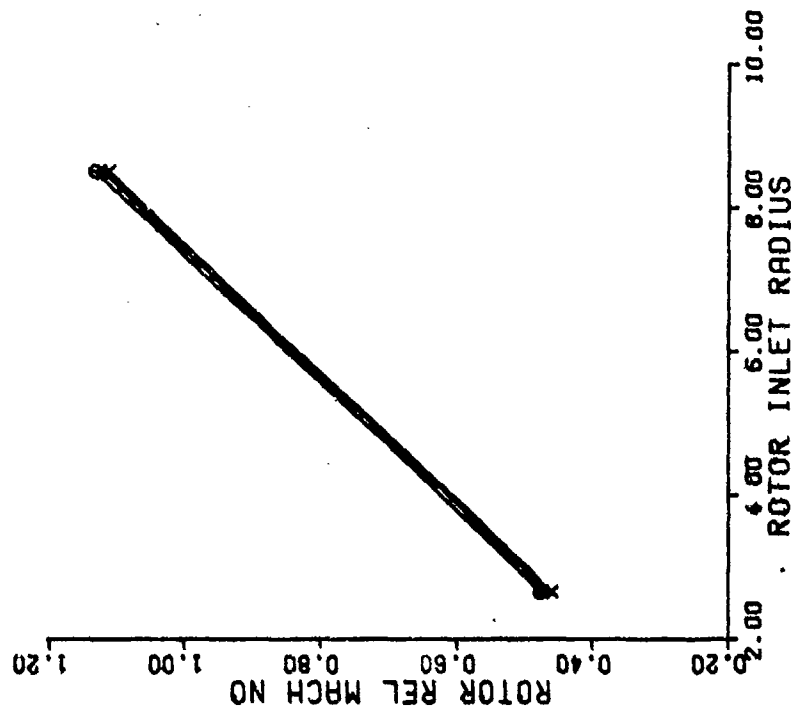


FIGURE 60 ROTOR RELATIVE MACH NUMBER  
VS INLET RADIUS (75% SPEED)

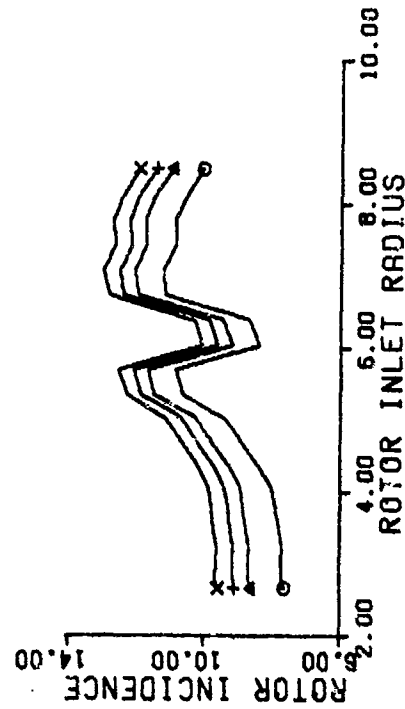


FIGURE 61 ROTOR INCIDENCE VS INLET  
RADIUS (75% SPEED)



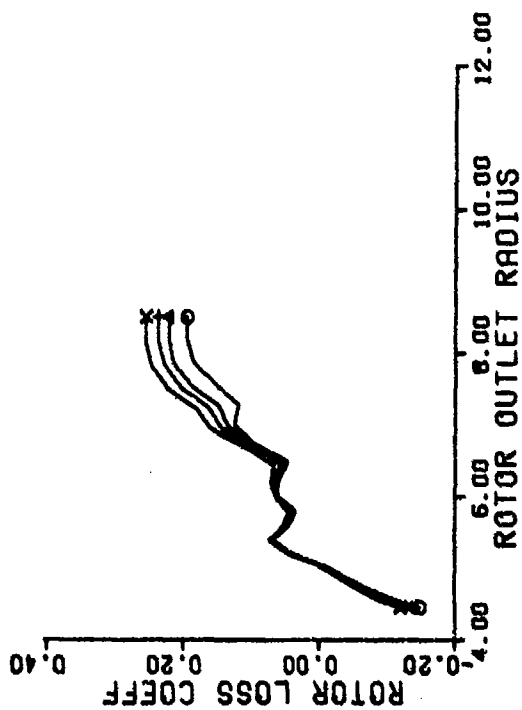


FIGURE 62 ROTOR LOSS COEFFICIENT VS  
OUTLET RADIUS (75% SPEED)

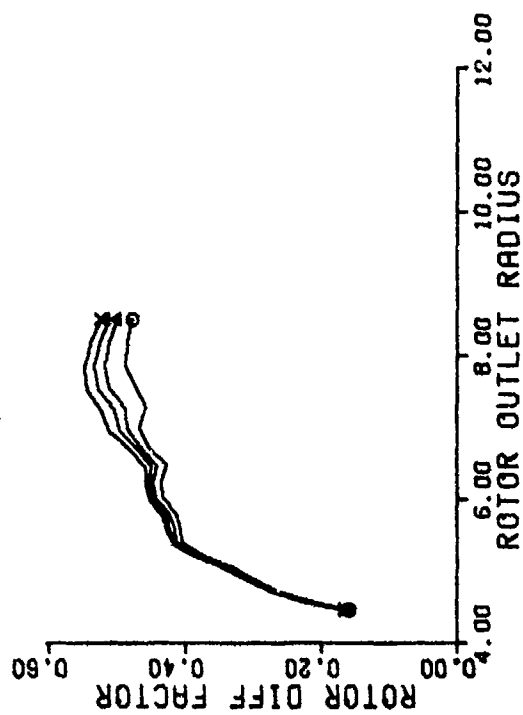


FIGURE 63 ROTOR DIFFUSION FACTOR VS  
OUTLET RADIUS (75% SPEED)



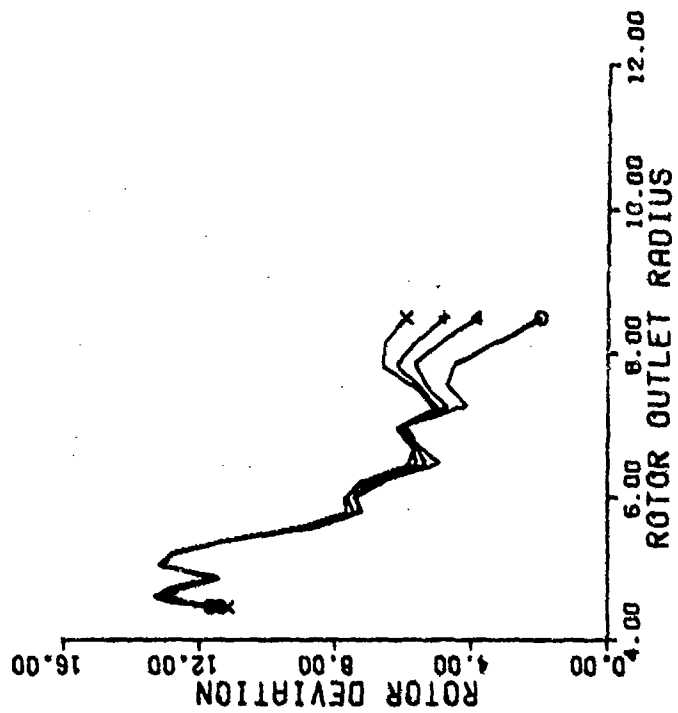


FIGURE 64 ROTOR DEVIATION VS OUTLET RADIUS (75% SPEED)

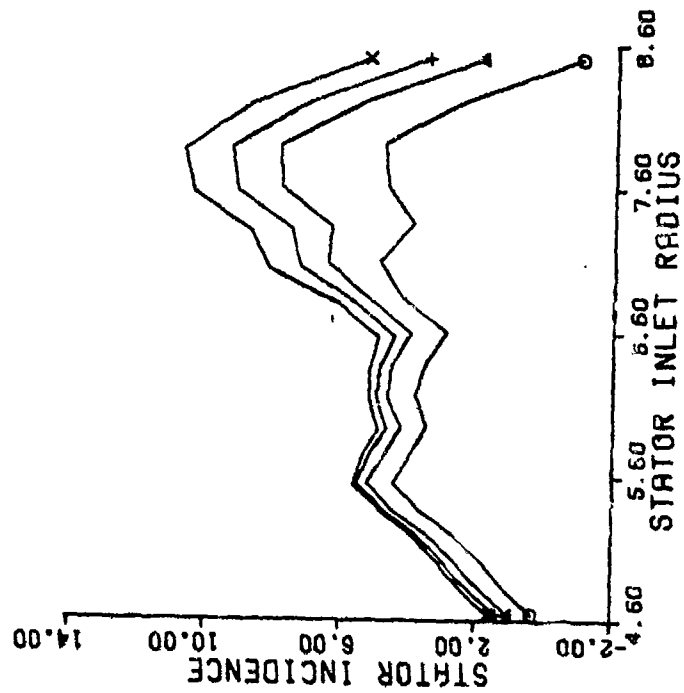


FIGURE 65 STATOR INCIDENCE VS INLET RADIUS (75% SPEED)



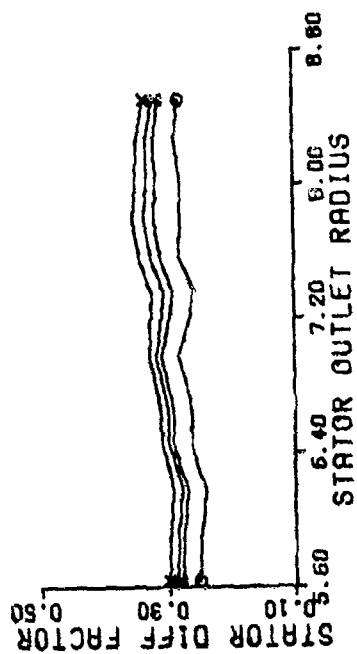


FIGURE 67 STATOR DIFFUSION FACTOR VS  
OUTLET RADIUS (75% SPEED)

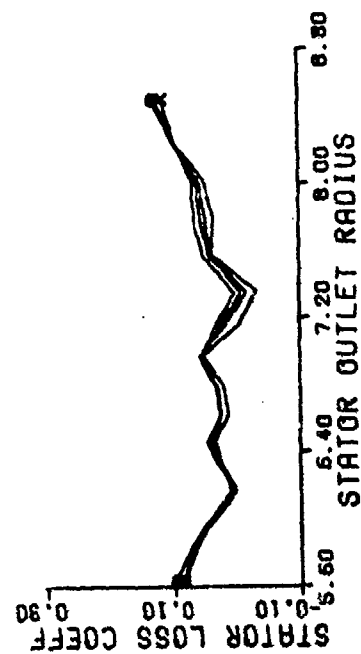


FIGURE 69 STATOR LOSS COEFFICIENT VS  
OUTLET RADIUS (75% SPEED)

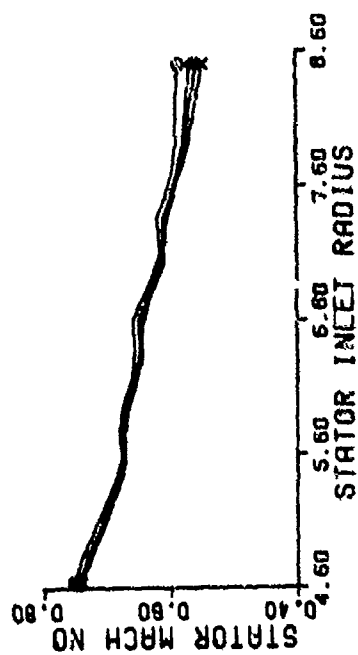


FIGURE 66 STATOR MACH NUMBER VS  
INLET RADIUS (75% SPEED)

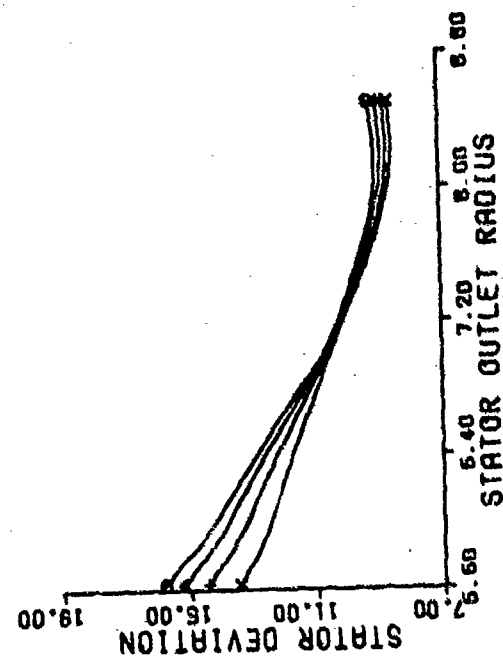


FIGURE 68 STATOR DEVIATION VS OUTLET  
RADIUS (75% SPEED)



# TABLE X

## IDENTIFICATION OF SYMBOLS FOR 80%-SPEED ACROSS BLADE FIGURES

TEST IDENTIFICATION	SYMBOL
512150501680	X
512150301280	+
512050200080	Δ
512050100280	⊙



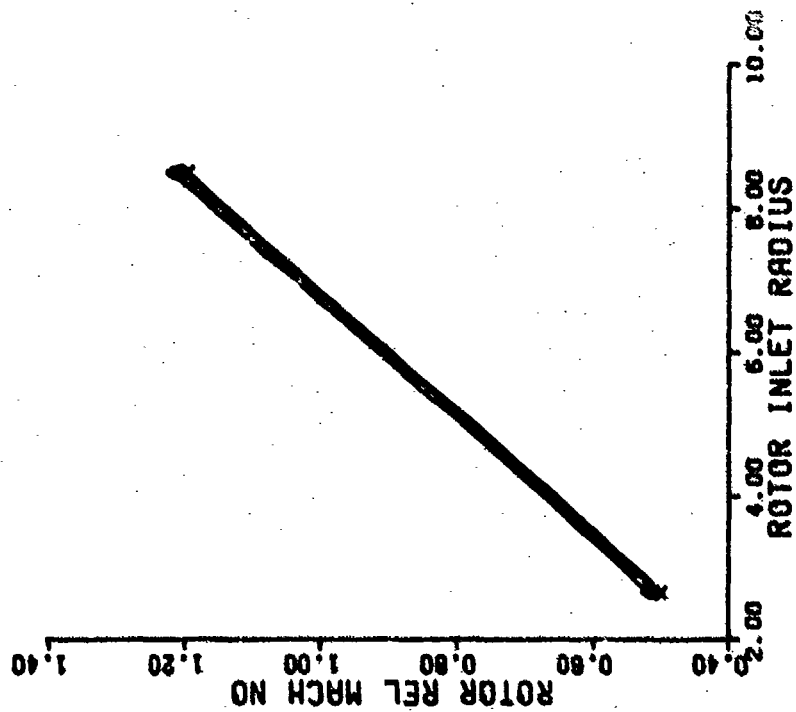


FIGURE 70 ROTOR RELATIVE MACH NUMBER  
VS INLET RADIUS (80% SPEED)

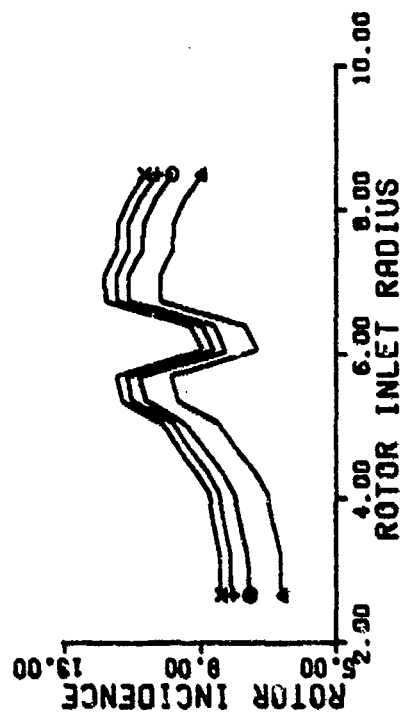


FIGURE 71 ROTOR INCIDENCE VS INLET  
RADIUS (80% SPEED)



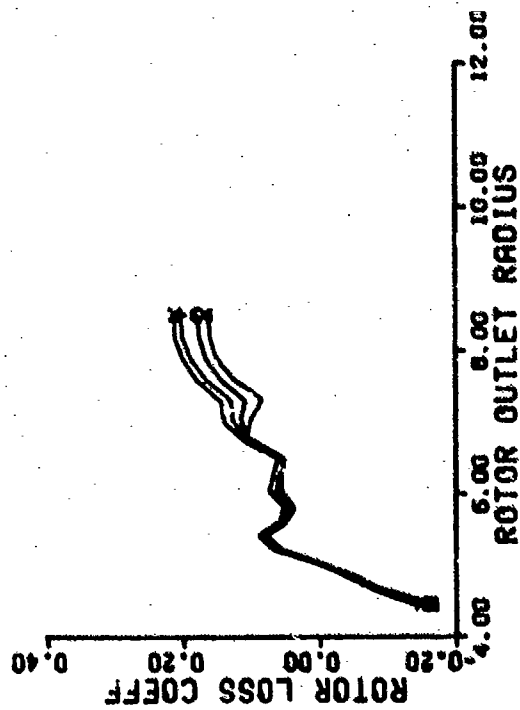


FIGURE 72 ROTOR LOSS COEFFICIENT VS  
OUTLET RADIUS (85% SPEED)

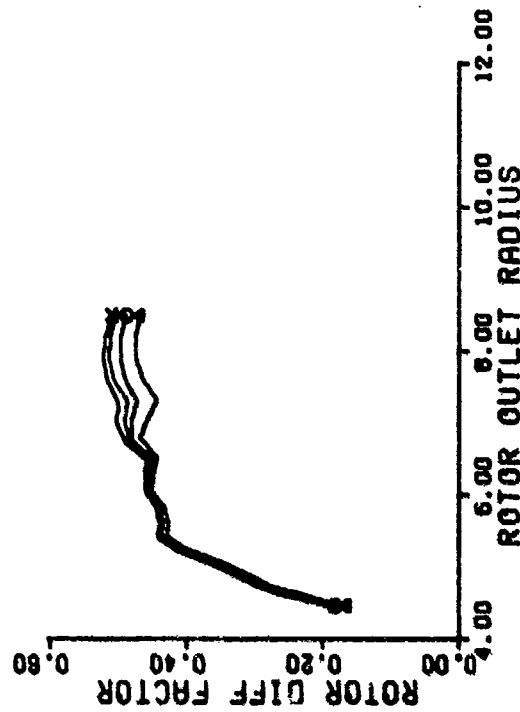


FIGURE 73 ROTOR DIFFUSION FACTOR VS  
OUTLET RADIUS (80% SPEED)



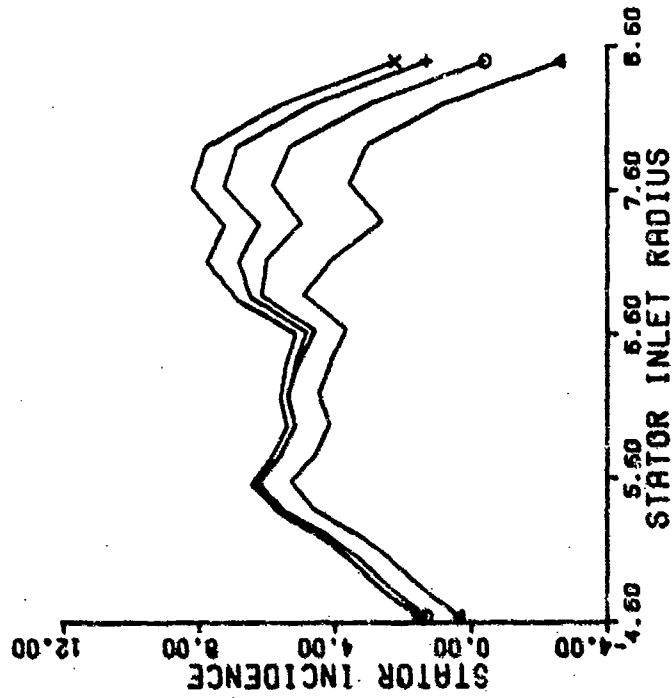


FIGURE 75 STATOR INCIDENCE VS INLET RADIUS (80% SPEED)

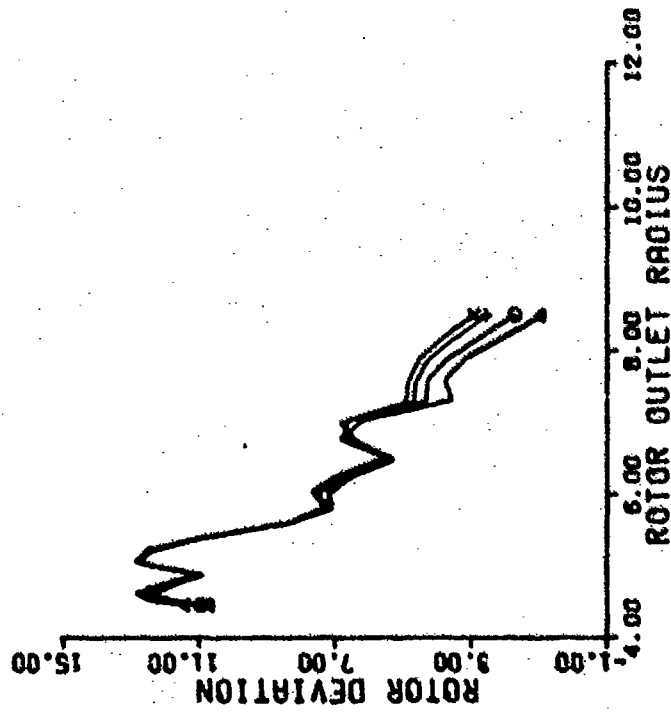


FIGURE 74 ROTOR DEVIATION VS OUTLET RADIUS (80% SPEED)



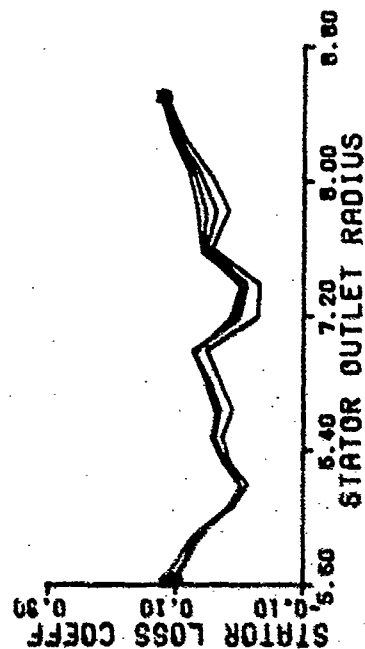
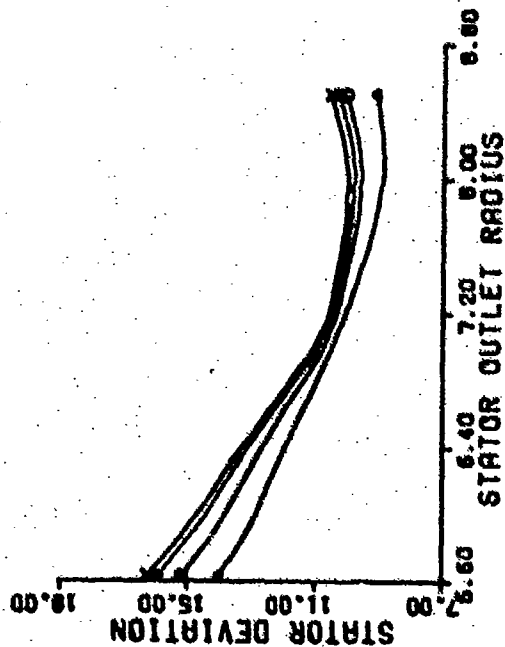
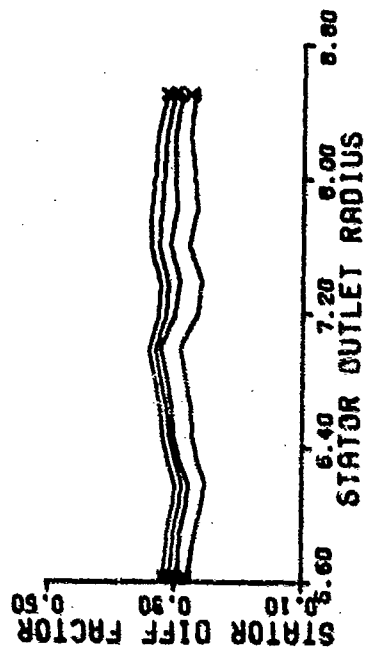
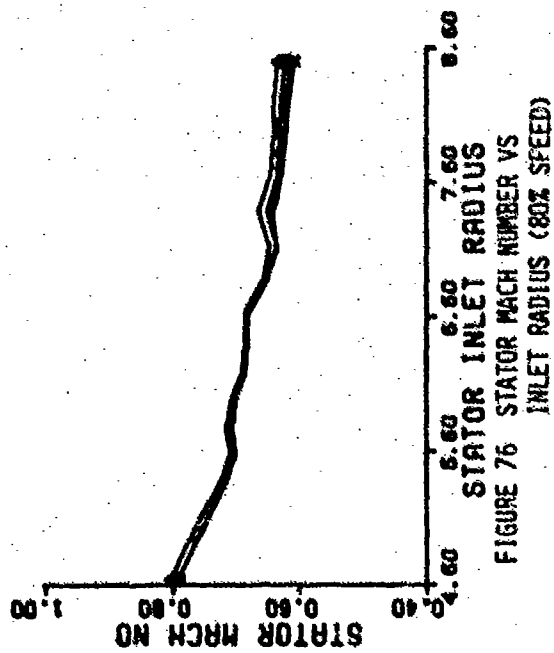




TABLE XI

IDENTIFICATION OF SYMBOLS  
FOR 85%-SPEED ACROSS-BLADE FIGURES

TEST IDENTIFICATION	SYMBOL
512160802685	✕
512160702285	↑
512160601885	◇
512160501485	×
512160401085	+
512160300285	△
512160200085	⊙



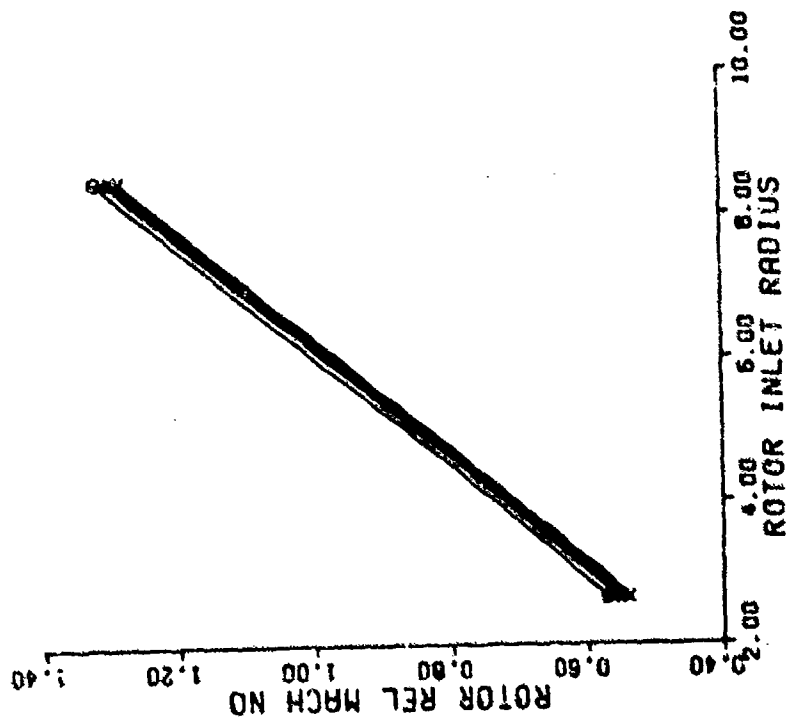


FIGURE 80 ROTOR RELATIVE MACH NUMBER  
VS INLET RADIUS (85% SPEED)

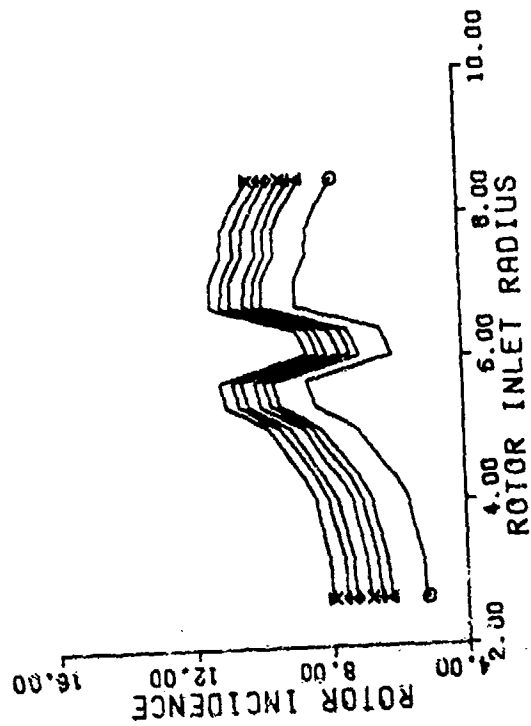


FIGURE 81 ROTOR INCIDENCE VS INLET  
RADIUS (85% SPEED)



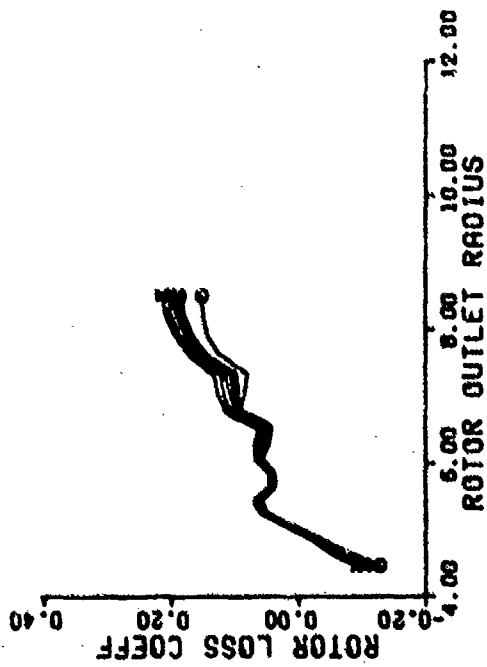


FIGURE 82 ROTOR LOSS COEFFICIENT VS  
OUTLET RADIUS (85% SPEED)

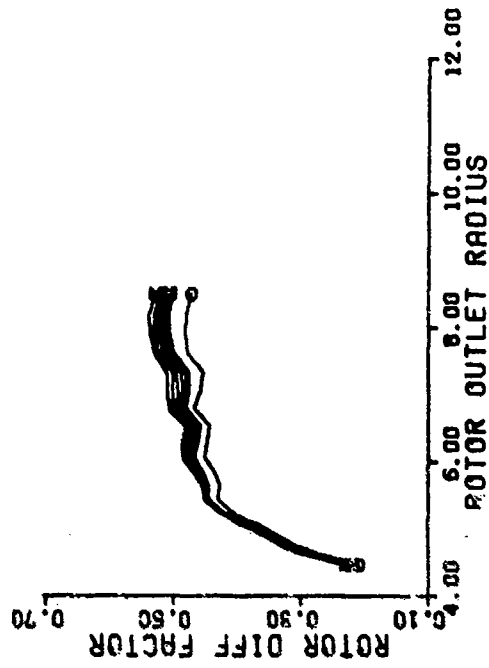


FIGURE 83 ROTOR DIFFUSION FACTOR VS  
OUTLET RADIUS (85% SPEED)



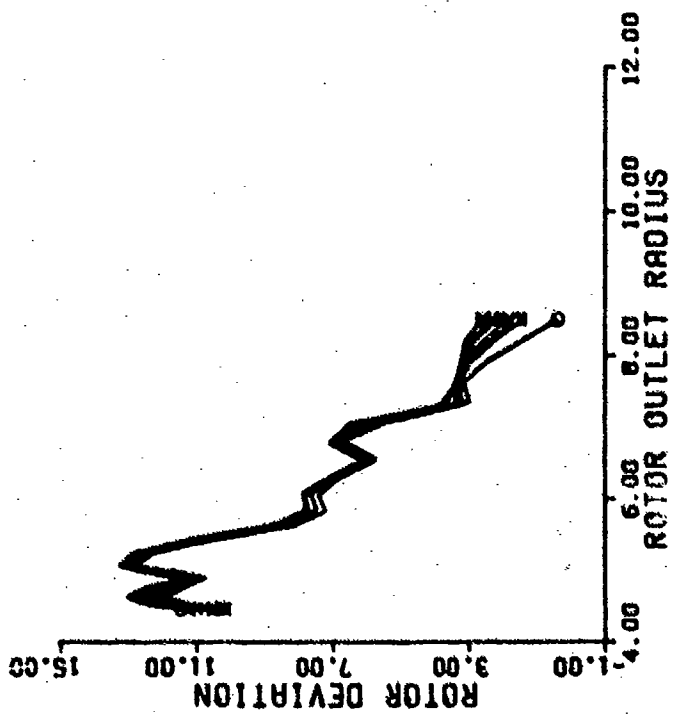


FIGURE 84 ROTOR DEVIATION VS OUTLET RADIUS (85% SPEED)

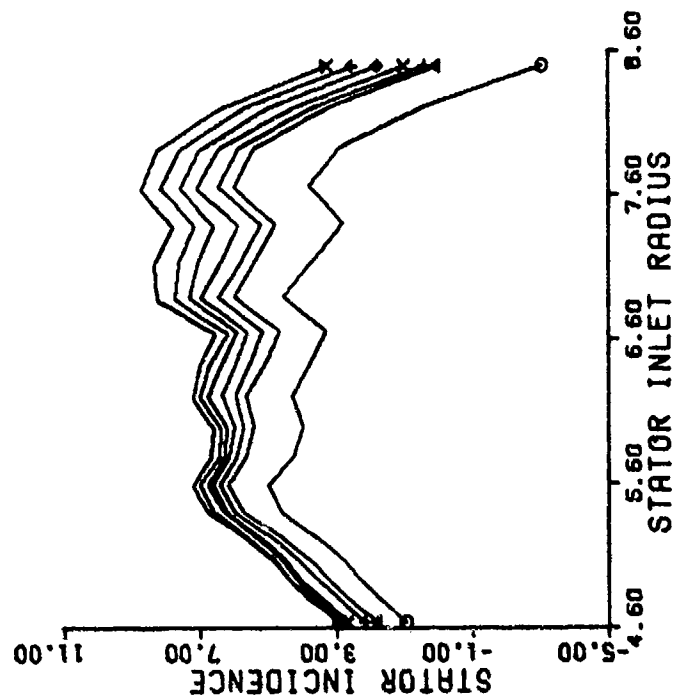


FIGURE 85 STATOR INCIDENCE VS INLET RADIUS (85% SPEED)



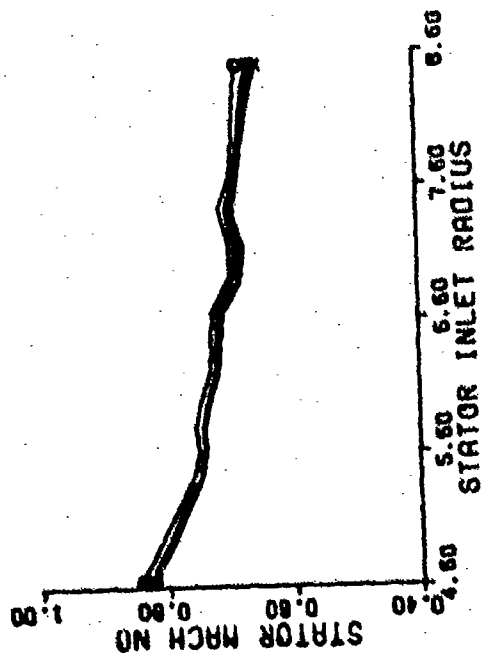


FIGURE 86 STATOR MACH NUMBER VS  
INLET RADIUS (85% SPEED)

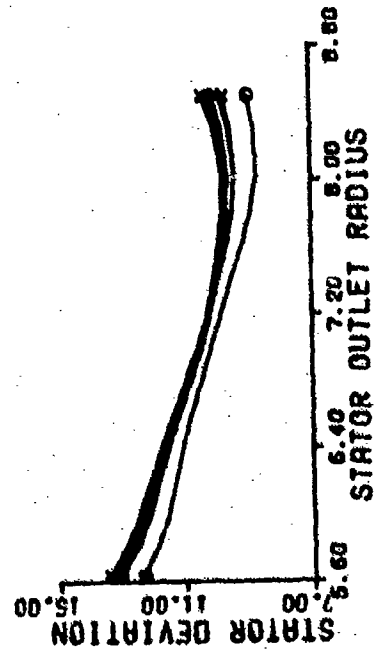


FIGURE 88 STATOR DEVIATION VS OUTLET  
RADIUS (85% SPEED)

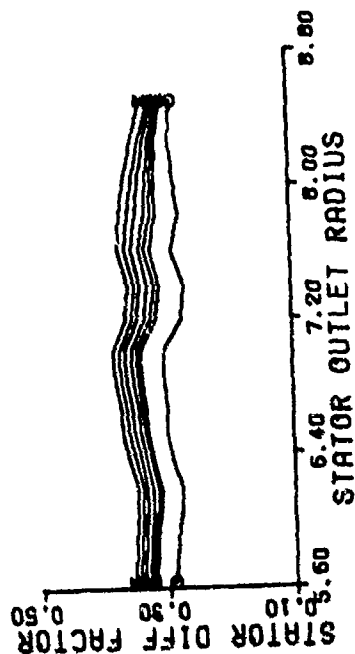


FIGURE 87 STATOR DIFFUSION FACTOR VS  
OUTLET RADIUS (85% SPEED)

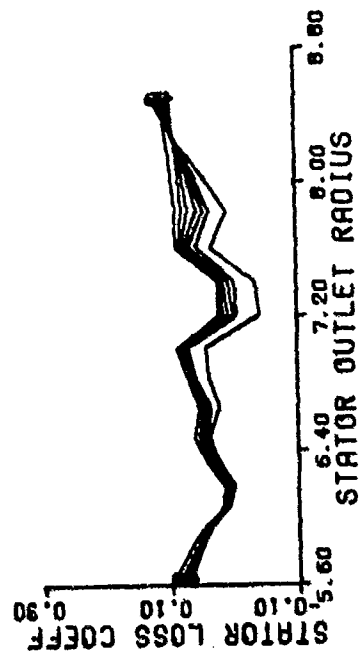


FIGURE 89 STATOR LOSS COEFFICIENT VS  
OUTLET RADIUS (85% SPEED)



TABLE XII

IDENTIFICATION OF SYMBOLS  
FOR 90%-SPEED ACROSS-BLADE FIGURES

TEST IDENTIFICATION	SYMBOL
601220703590	✕
601220603090	↑
601220502590	◇
601220402090	×
601220301590	+
601150300290	△
512170300090	⊙



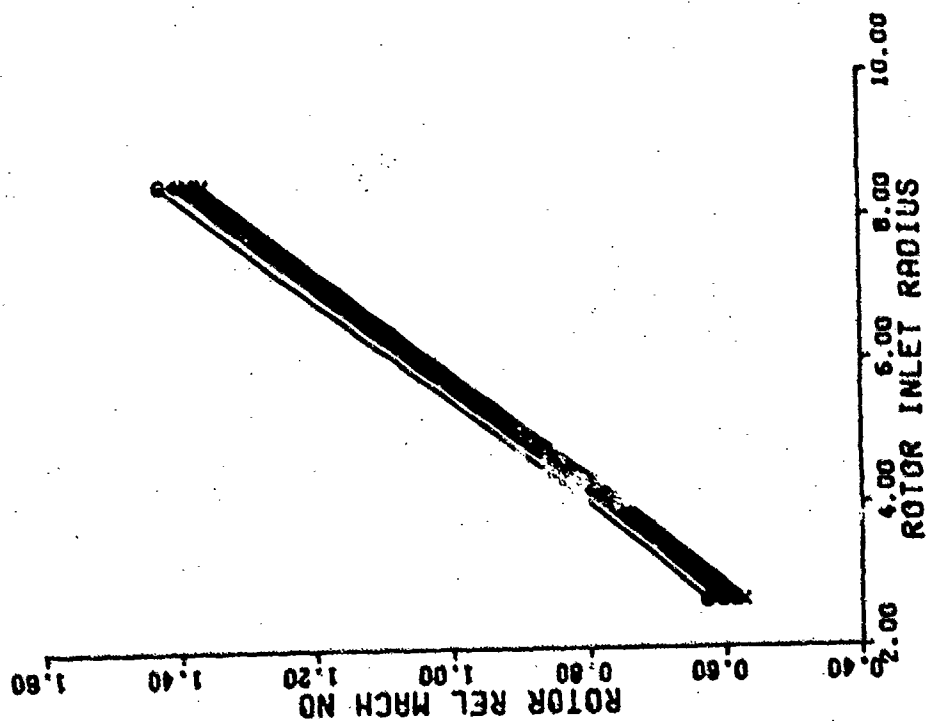


FIGURE 90 ROTOR RELATIVE MACH NUMBER  
VS INLET RADIUS (90% SPEED)

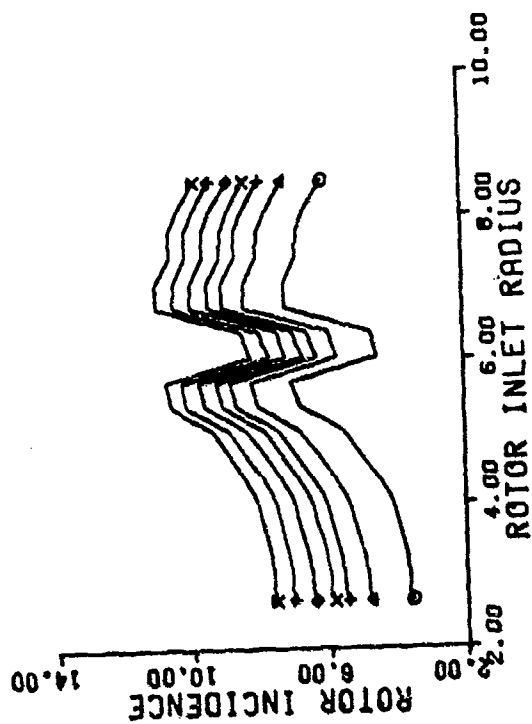


FIGURE 91 ROTOR INCIDENCE VS INLET  
RADIUS (90% SPEED)



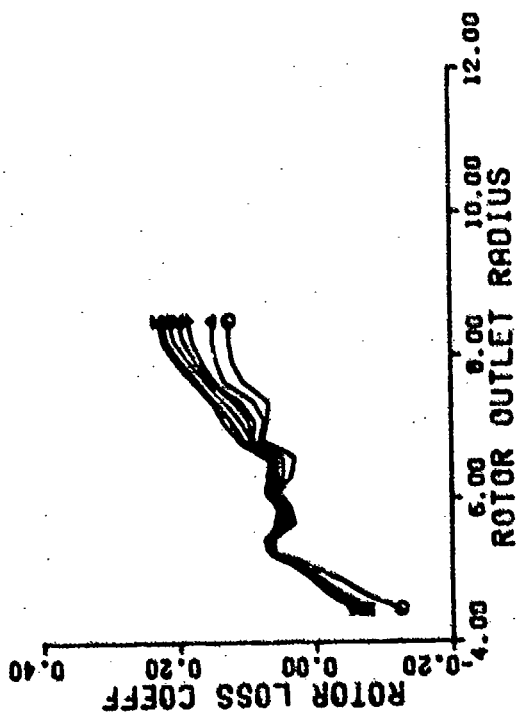


FIGURE 92 ROTOR LOSS COEFFICIENT VS  
OUTLET RADIUS (90% SPEED)

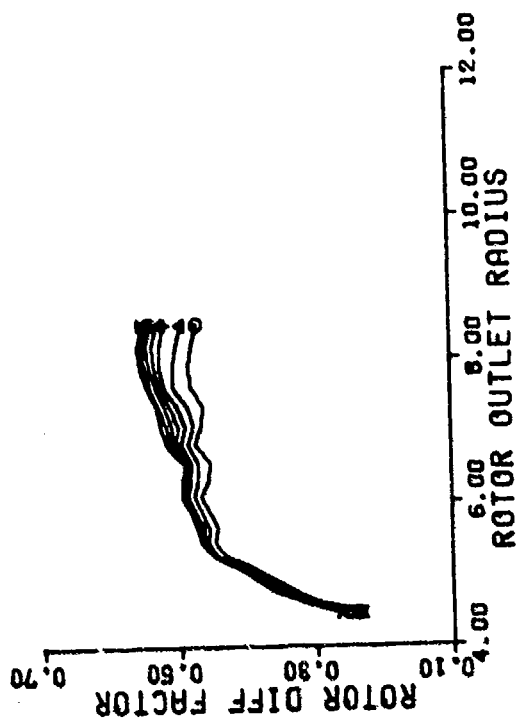


FIGURE 93 ROTOR DIFFUSION FACTOR VS  
OUTLET RADIUS (90% SPEED)



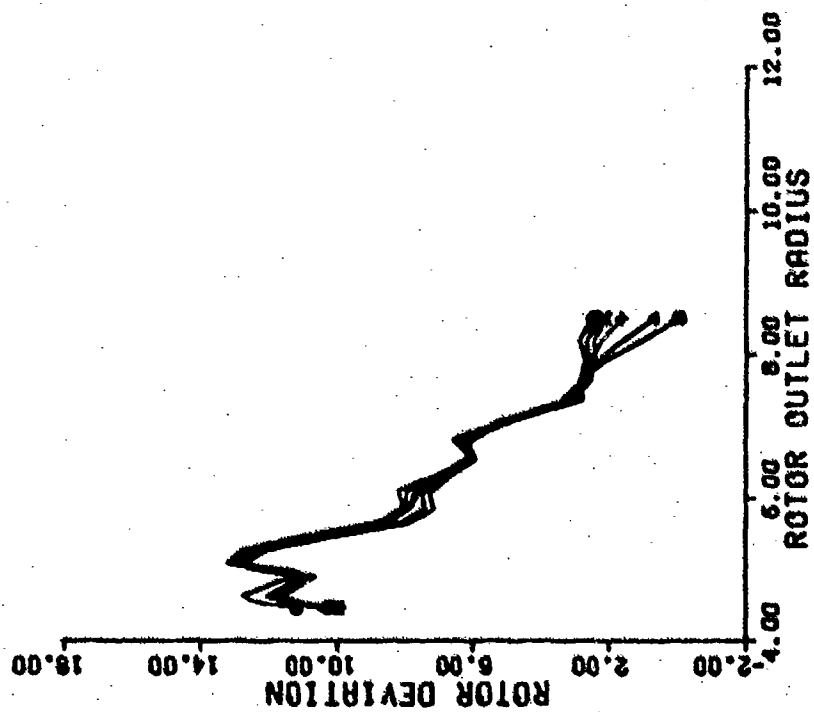


FIGURE 94 ROTOR DEVIATION VS OUTLET RADIUS (90% SPEED)

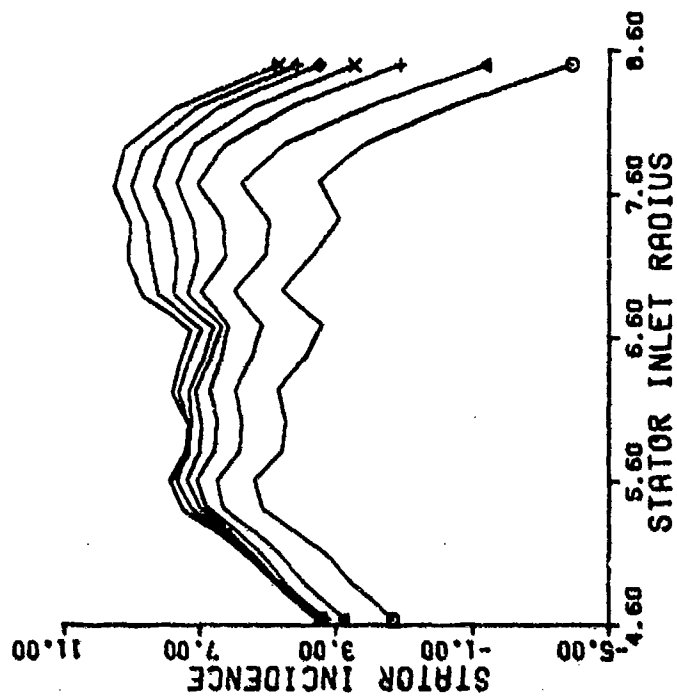


FIGURE 95 STATOR INCIDENCE VS INLET RADIUS (90% SPEED)



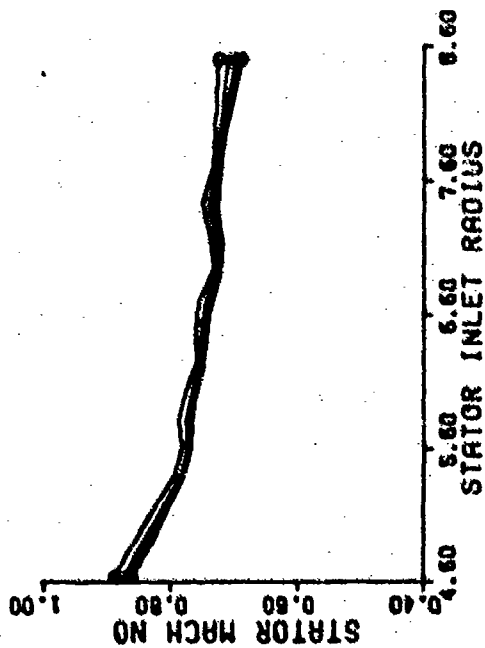


FIGURE 96 STATOR MACH NUMBER VS INLET RADIUS (90% SPEED)

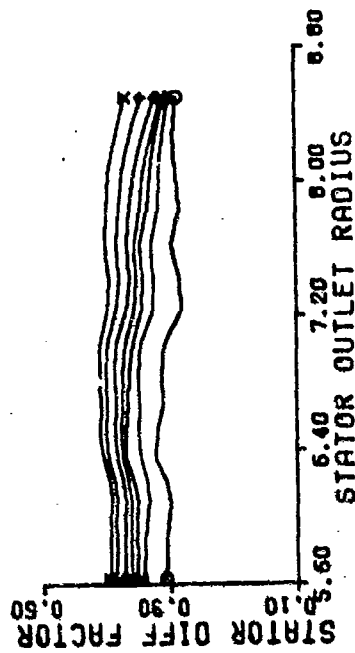


FIGURE 97 STATOR DIFFUSION FACTOR VS OUTLET RADIUS (90% SPEED)

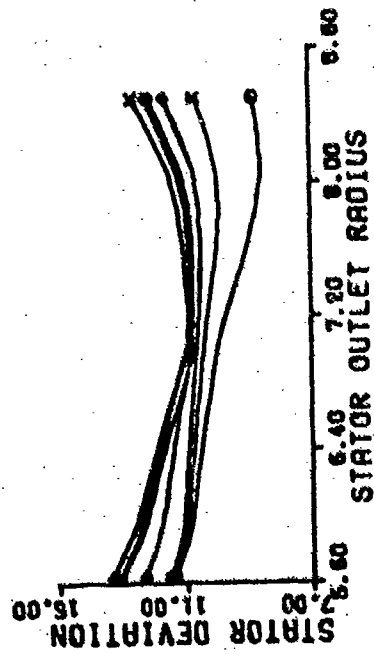


FIGURE 98 STATOR DEVIATION VS OUTLET RADIUS (90% SPEED)

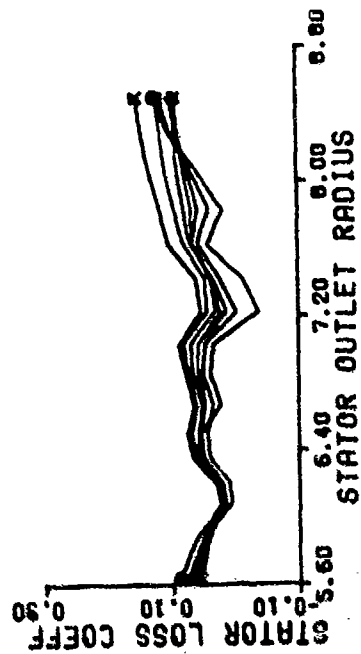


FIGURE 99 STATOR LOSS COEFFICIENT VS OUTLET RADIUS (90% SPEED)



TABLE XIII

IDENTIFICATION OF SYMBOLS  
FOR 95%-SPEED ACROSS-BLADE FIGURES

TEST IDENTIFICATION	SYMBOL
601290903795	Y
601290803295	Z
601290702895	X
601290602495	+
601300502095	◇
601300401795	X
601300301095	+
601300200295	△
601300100095	⊙



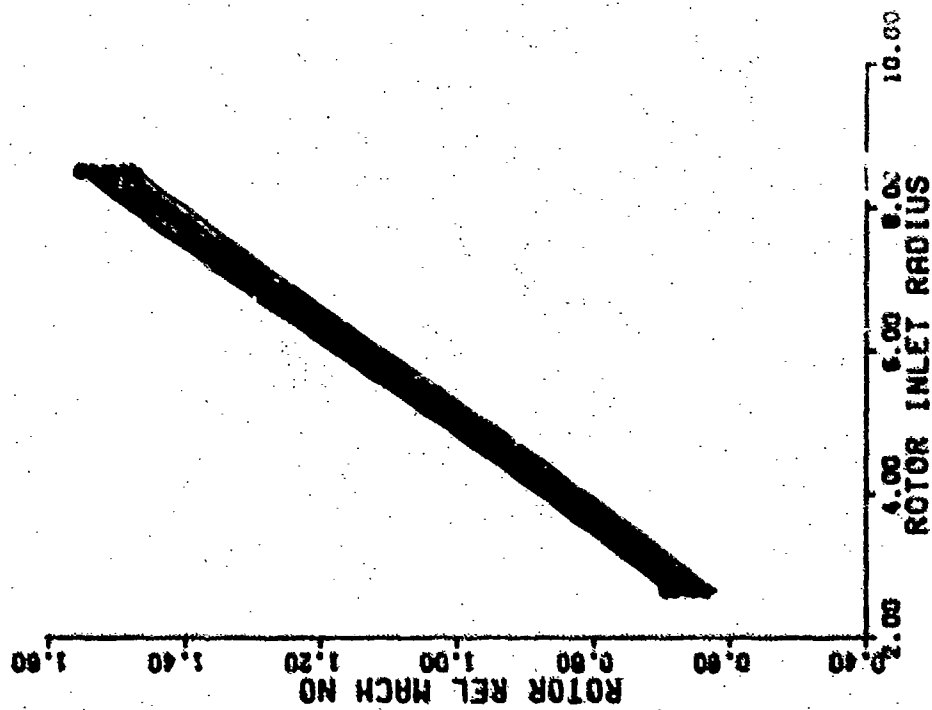
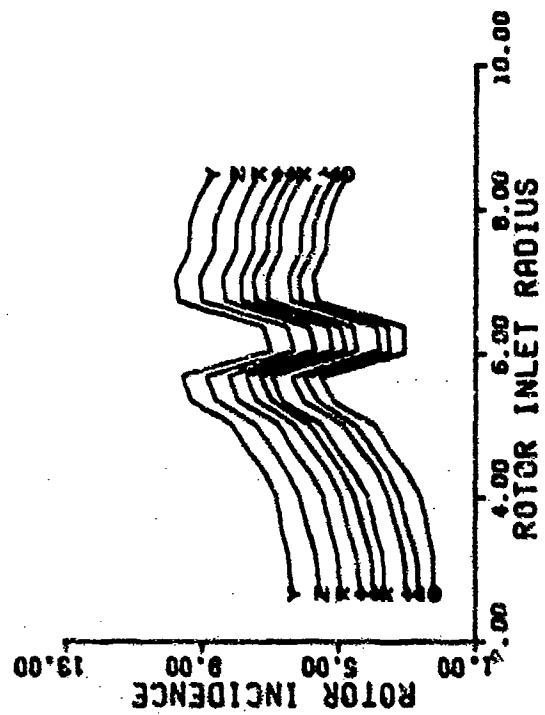


FIGURE 100 ROTOR RELATIVE MACH NUMBER  
VS INLET RADIUS (95% SPEED)



URE 101 ROTOR INCIDENCE VS INLET  
RADIUS (95% SPEED)



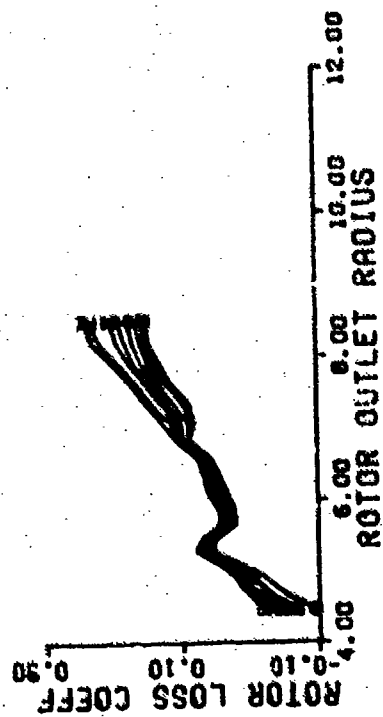


FIGURE 102 ROTOR LOSS COEFFICIENT VS  
OUTLET RADIUS (95% SPEED)

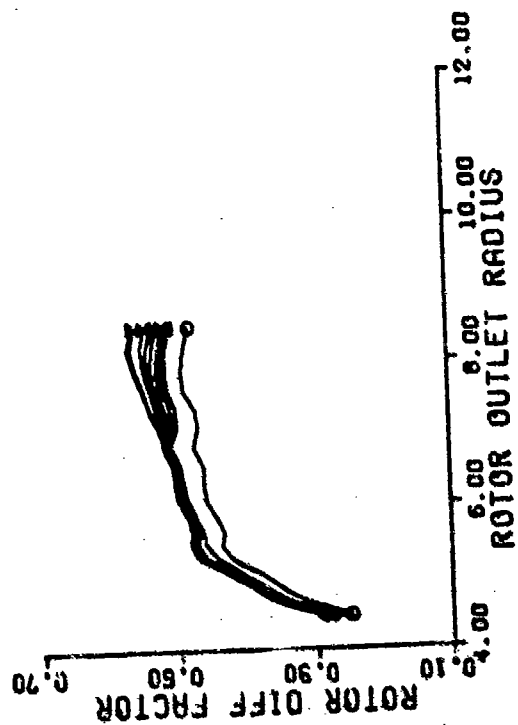


FIGURE 103 ROTOR DIFFUSION FACTOR VS  
OUTLET RADIUS (95% SPEED)



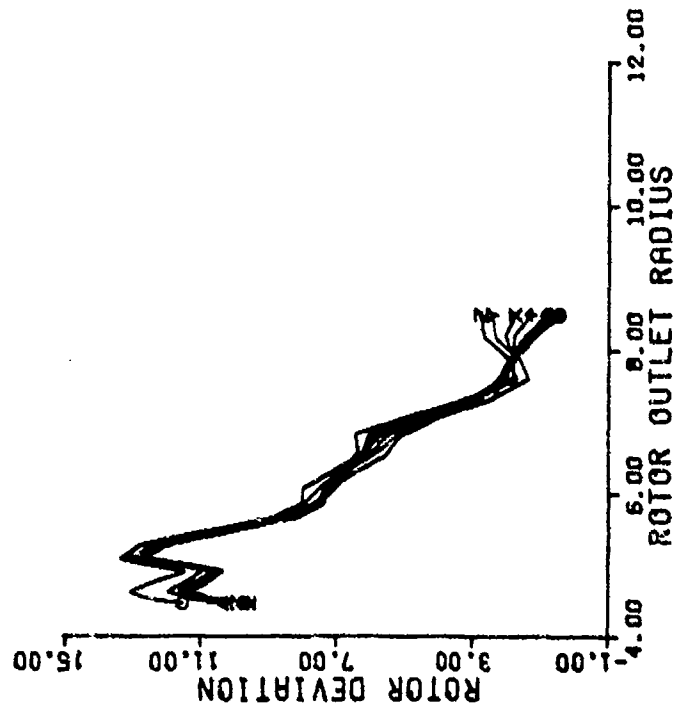


FIGURE 104 ROTOR DEVIATION VS OUTLET  
RADIUS (95% SPEED)

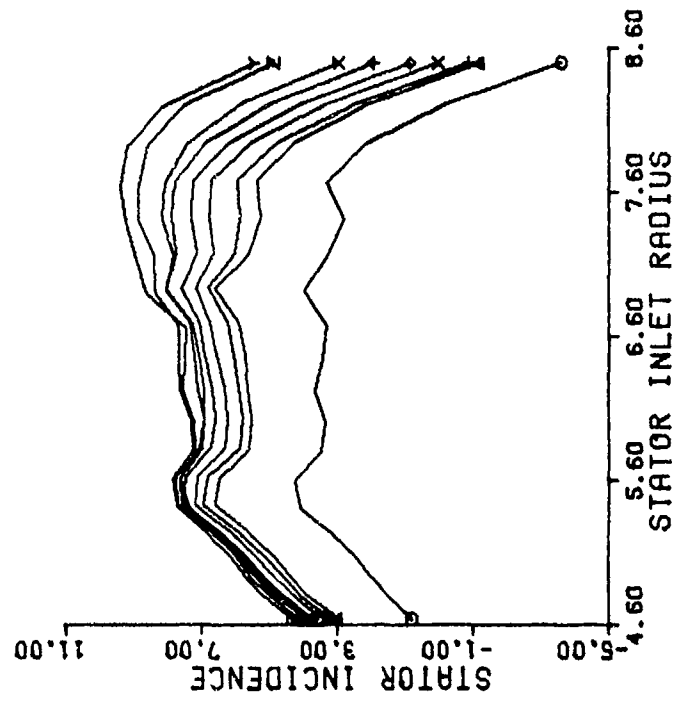


FIGURE 105 STATOR INCIDENCE VS INLET  
RADIUS (95% SPEED)



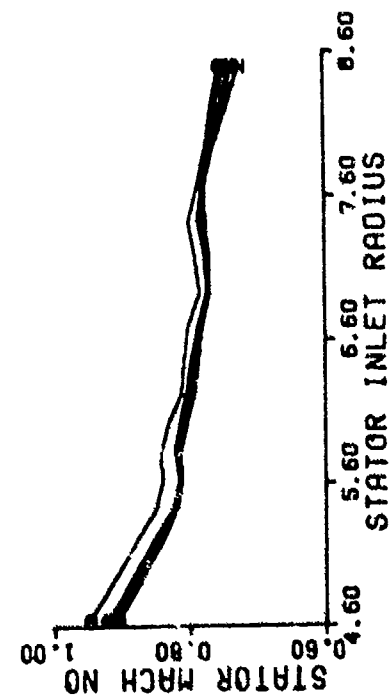


FIGURE 106 STATOR MACH NUMBER VS INLET RADIUS (95% SPEED)

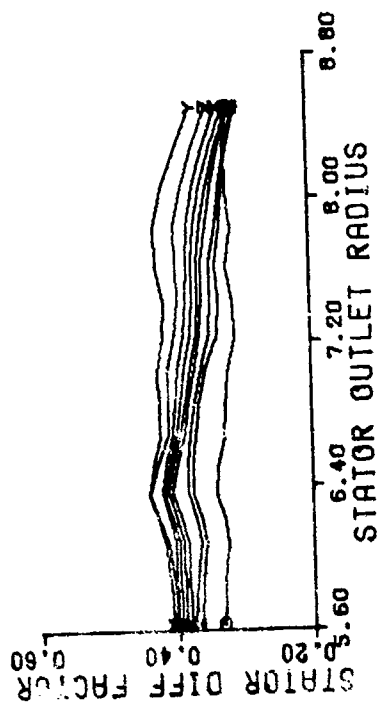


FIGURE 107 STATOR DIFFUSION FACTOR VS OUTLET RADIUS (95% SPEED)

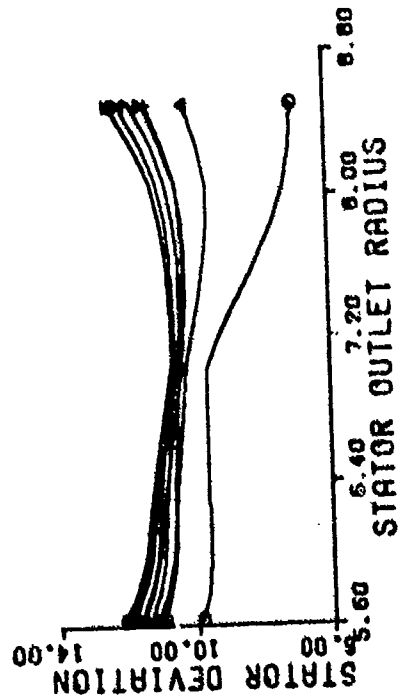


FIGURE 108 STATOR DEVIATION VS OUTLET RADIUS (95% SPEED)

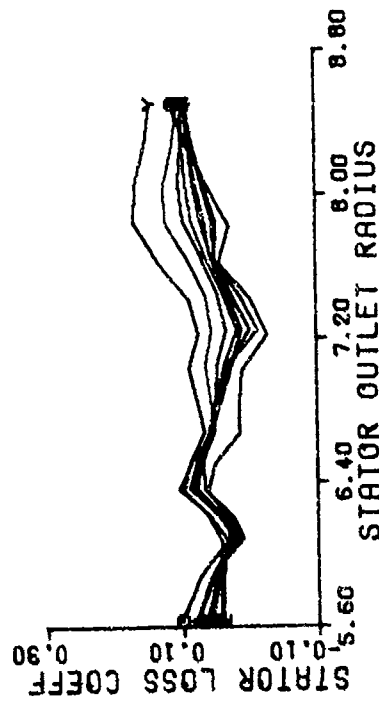


FIGURE 109 STATOR LOSS COEFFICIENT VS OUTLET RADIUS (95% SPEED)



TABLE XIV

IDENTIFICATION OF SYMBOLS  
FOR 100%-SPEED ACROSS-BLADE FIGURES

TEST IDENTIFICATION	SYMBOL
602200403100	Y
602200302700	Z
601221102600	X
601220902300	+
602200201900	◇
601220801600	×
601220101000	+
601160400200	△
601160200000	⊙



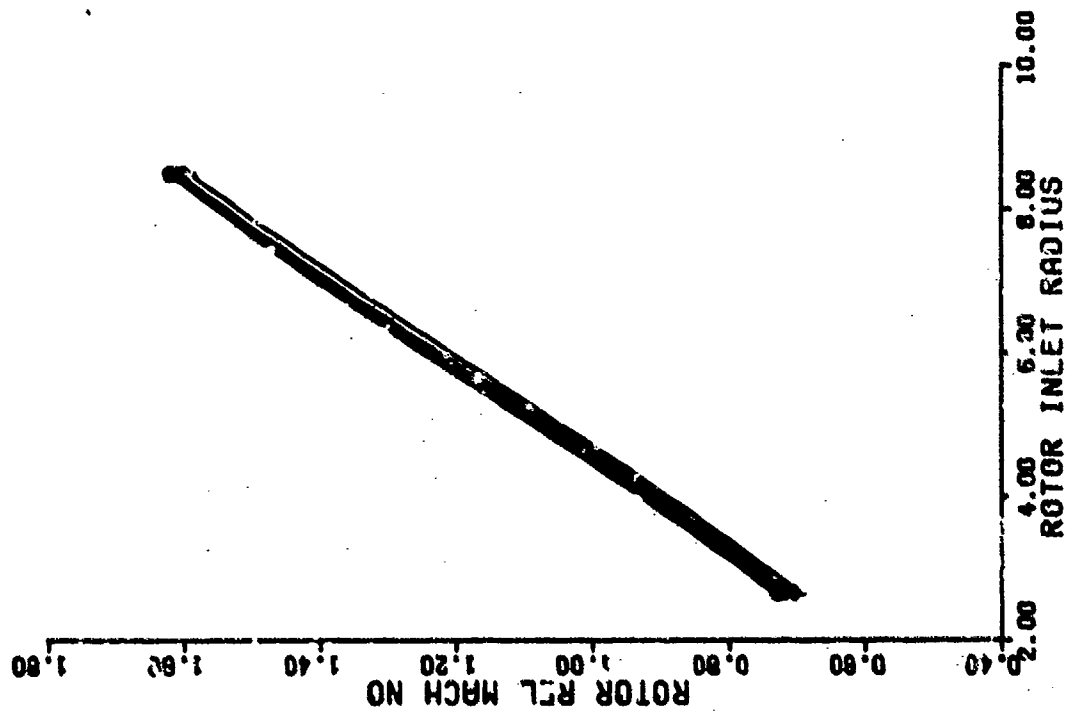


FIGURE 110 ROTOR RELATIVE MACH NUMBER  
VS INLET RADIUS (100% SPEED)

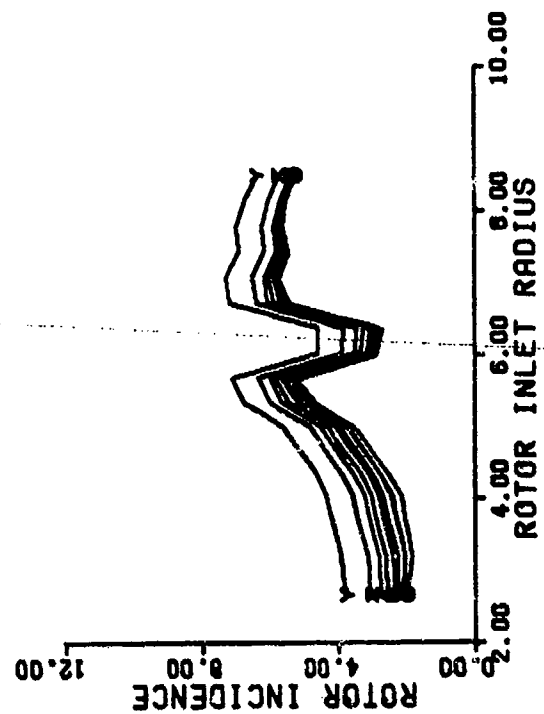


FIGURE 111 ROTOR INCIDENCE VS INLET  
RADIUS (100% SPEED)



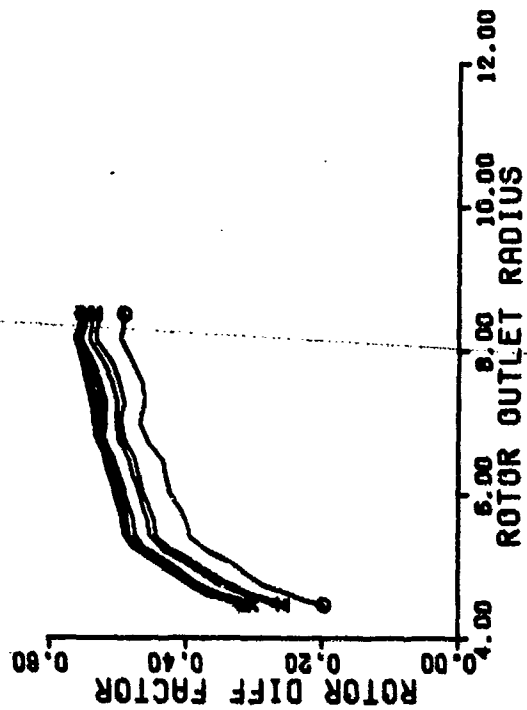


FIGURE 112 ROTOR LOSS COEFFICIENT VS  
OUTLET RADIUS (100% SPEED)

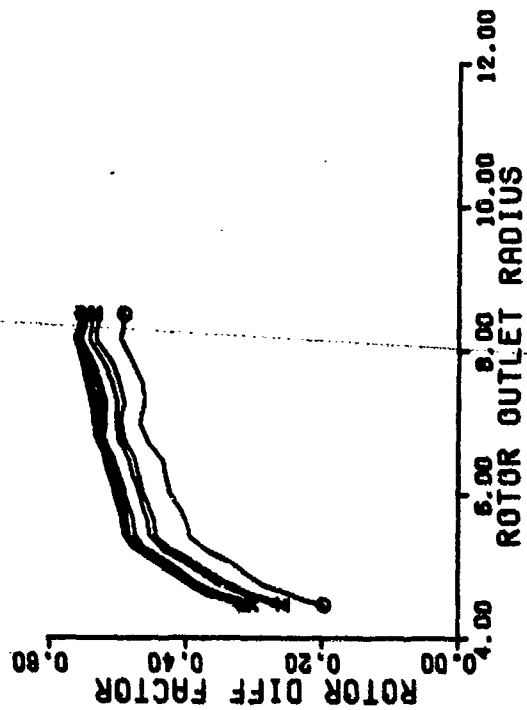


FIGURE 113 ROTOR DIFFUSION FACTOR VS  
OUTLET RADIUS (100% SPEED)



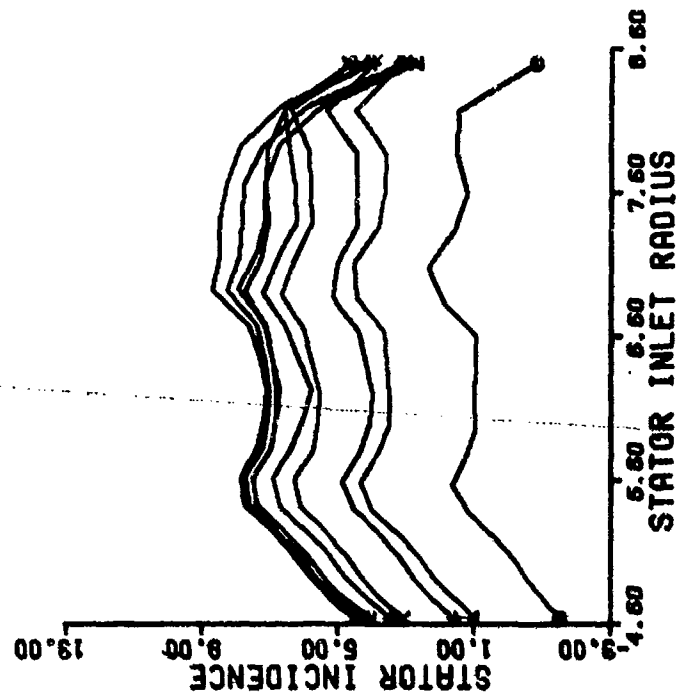


FIGURE 115 STATOR INCIDENCE VS INLET RADIUS (100% SPEED)

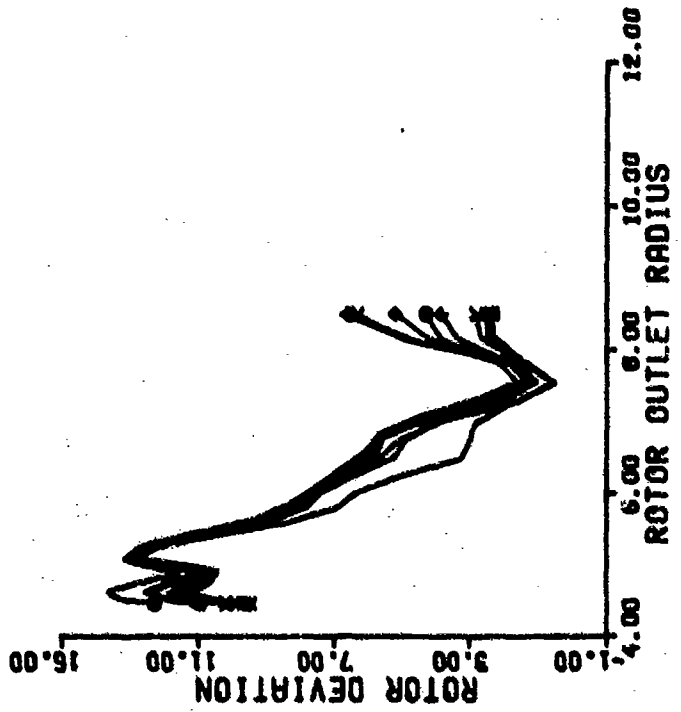


FIGURE 114 ROTOR DEVIATION VS OUTLET RADIUS (100% SPEED)



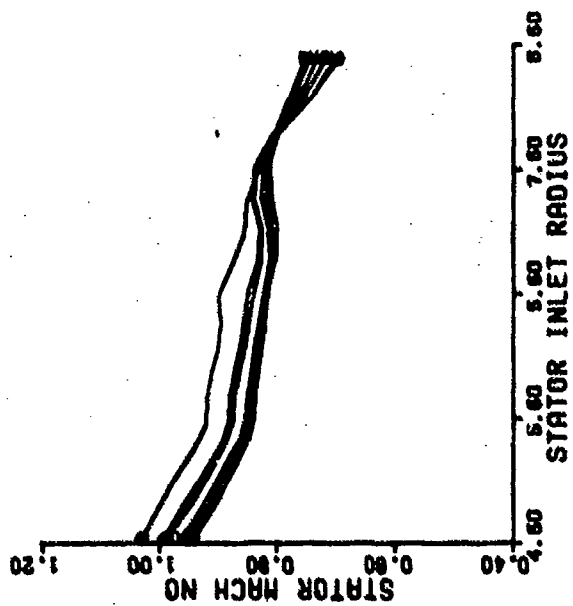


FIGURE 116 STATOR MACH NUMBER VS INLET RADIUS (100% SPEED)

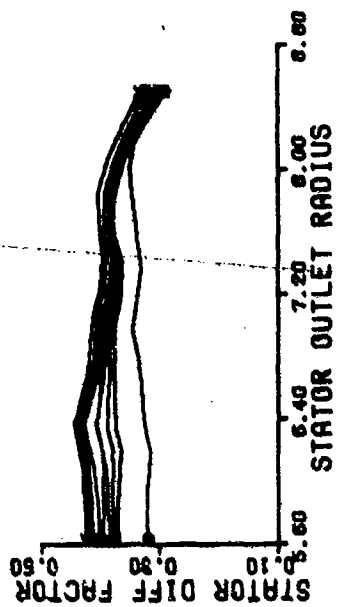


FIGURE 117 STATOR DIFFUSION FACTOR VS OUTLET RADIUS (100% SPEED)

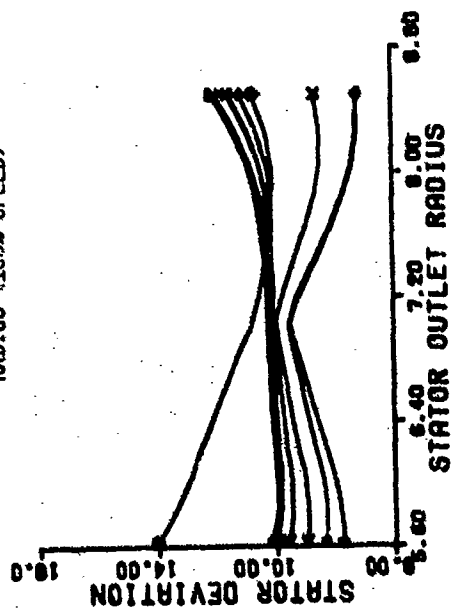


FIGURE 118 STATOR DEVIATION VS OUTLET RADIUS (100% SPEED)

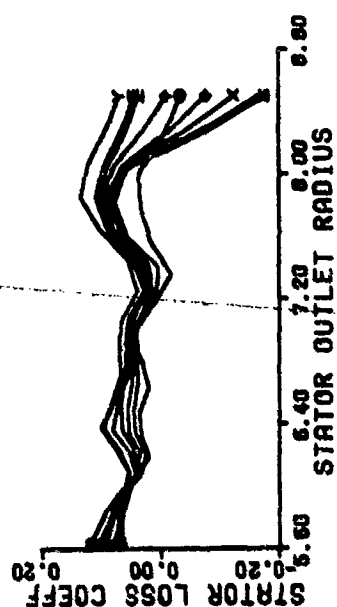


FIGURE 119 STATOR LOSS COEFFICIENT VS OUTLET RADIUS (100% SPEED)



TABLE XV

IDENTIFICATION OF SYMBOLS  
FOR 100% THRU-BLADE COMPARISON FIGURES

TEST IDENTIFICATION	SYMBOL
602200201900 CASE 1	①
602200201900 CASE 2	⚠



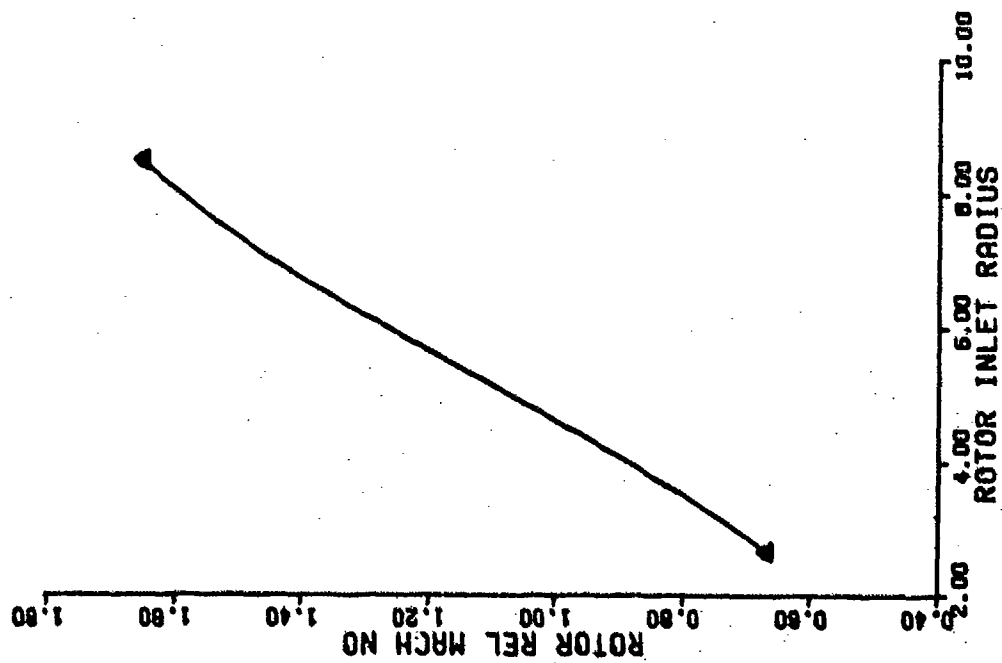


FIGURE 120 ROTOR RELATIVE MACH NUMBER VS INLET RADIUS (100% SPEED THRU-BLADE COMPARISON)

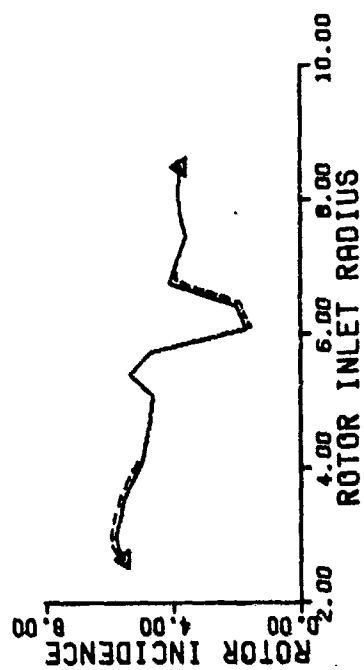


FIGURE 121 ROTOR INCIDENCE VS INLET RADIUS (100% SPEED THRU-BLADE COMPARISON)



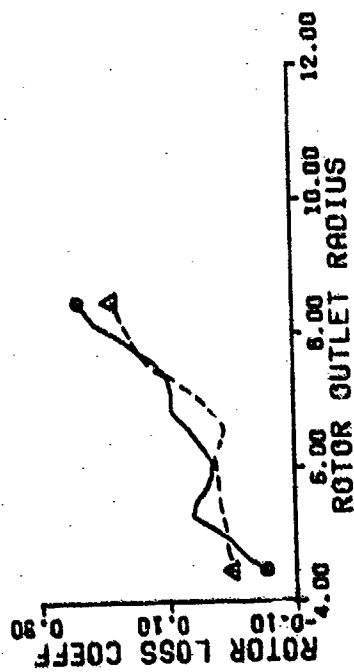


FIGURE 122 ROTOR LOSS COEFFICIENT VS OUTLET RADIUS (100% SPEED THRU-BLADE COMPARISON)

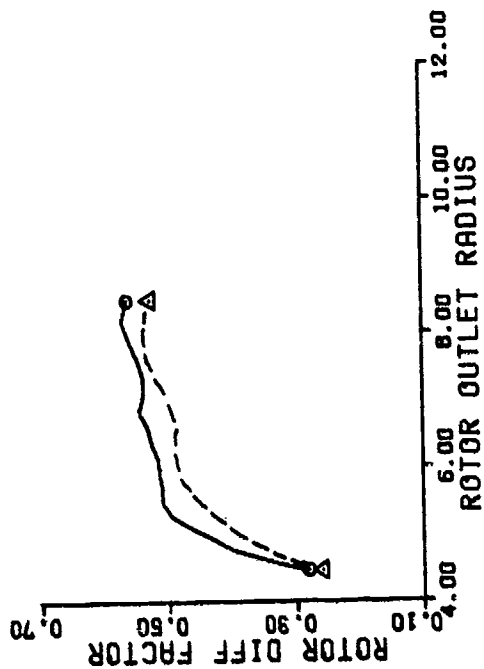


FIGURE 123 ROTOR DIFFUSION FACTOR VS OUTLET RADIUS (100% SPEED THRU-BLADE COMPARISON)



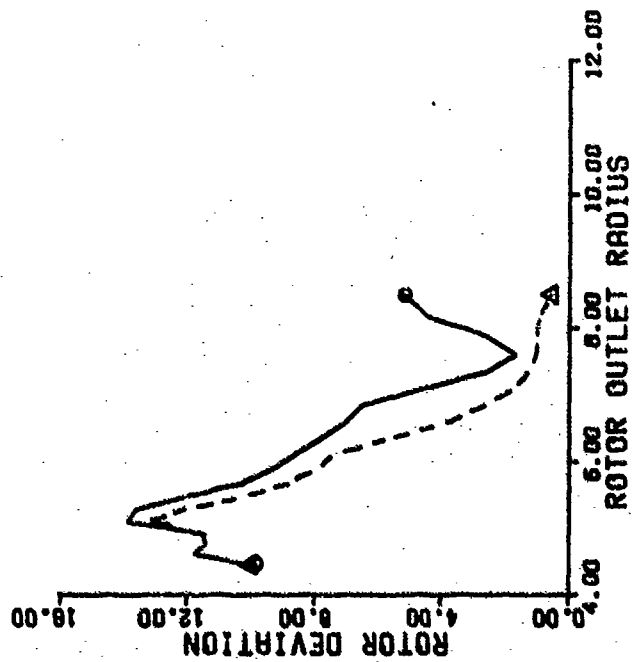


FIGURE 124 ROTOR DEVIATION VS OUTLET RADIUS  
(100% SPEED THRU-BLADE COMPARISON)

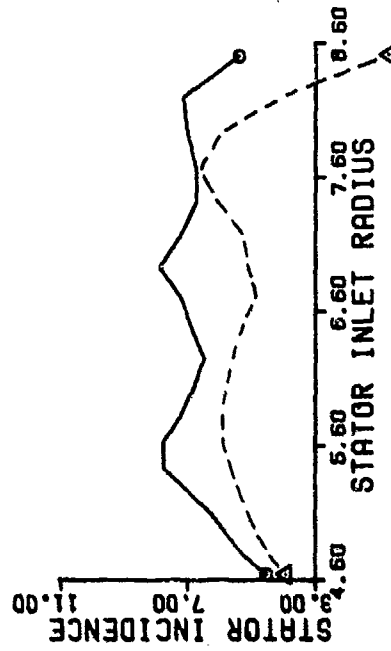


FIGURE 125 STATOR INCIDENCE VS INLET RADIUS  
(100% SPEED THRU-BLADE COMPARISON)



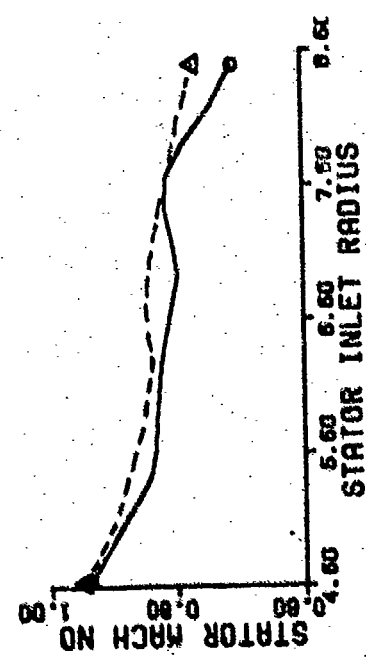


FIGURE 126 STATOR MACH NUMBER VS INLET RADIUS  
(100% SPEED THRU-BLADE COMPARISON)

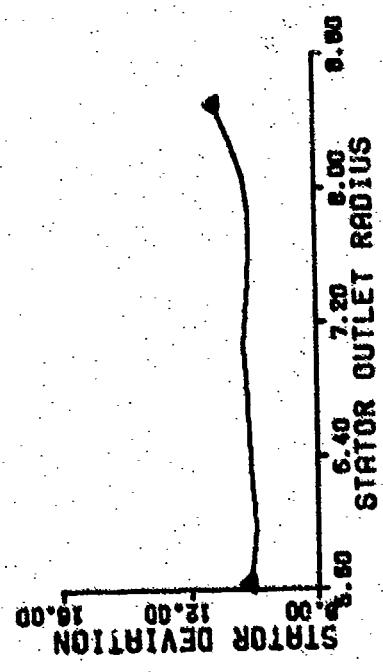


FIGURE 128 STATOR DEVIATION VS OUTLET RADIUS  
(100% SPEED THRU-BLADE COMPARISON)

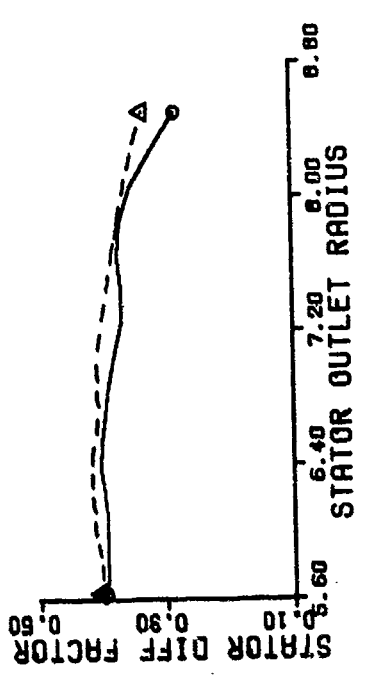


FIGURE 127 STATOR DIFFUSION FACTOR VS OUTLET RADIUS  
(100% SPEED THRU-BLADE COMPARISON)

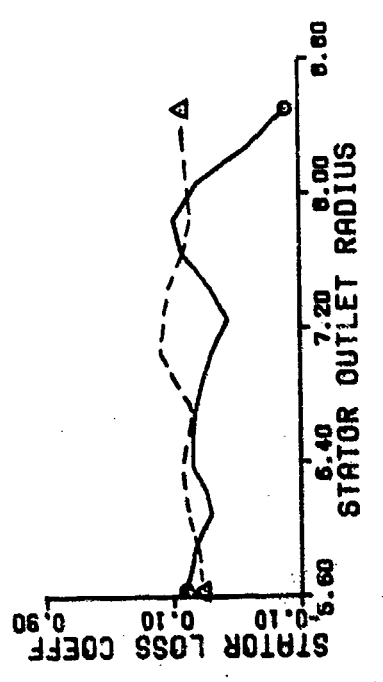


FIGURE 129 STATOR LOSS COEFFICIENT VS OUTLET RADIUS  
(100% SPEED THRU-BLADE COMPARISON)



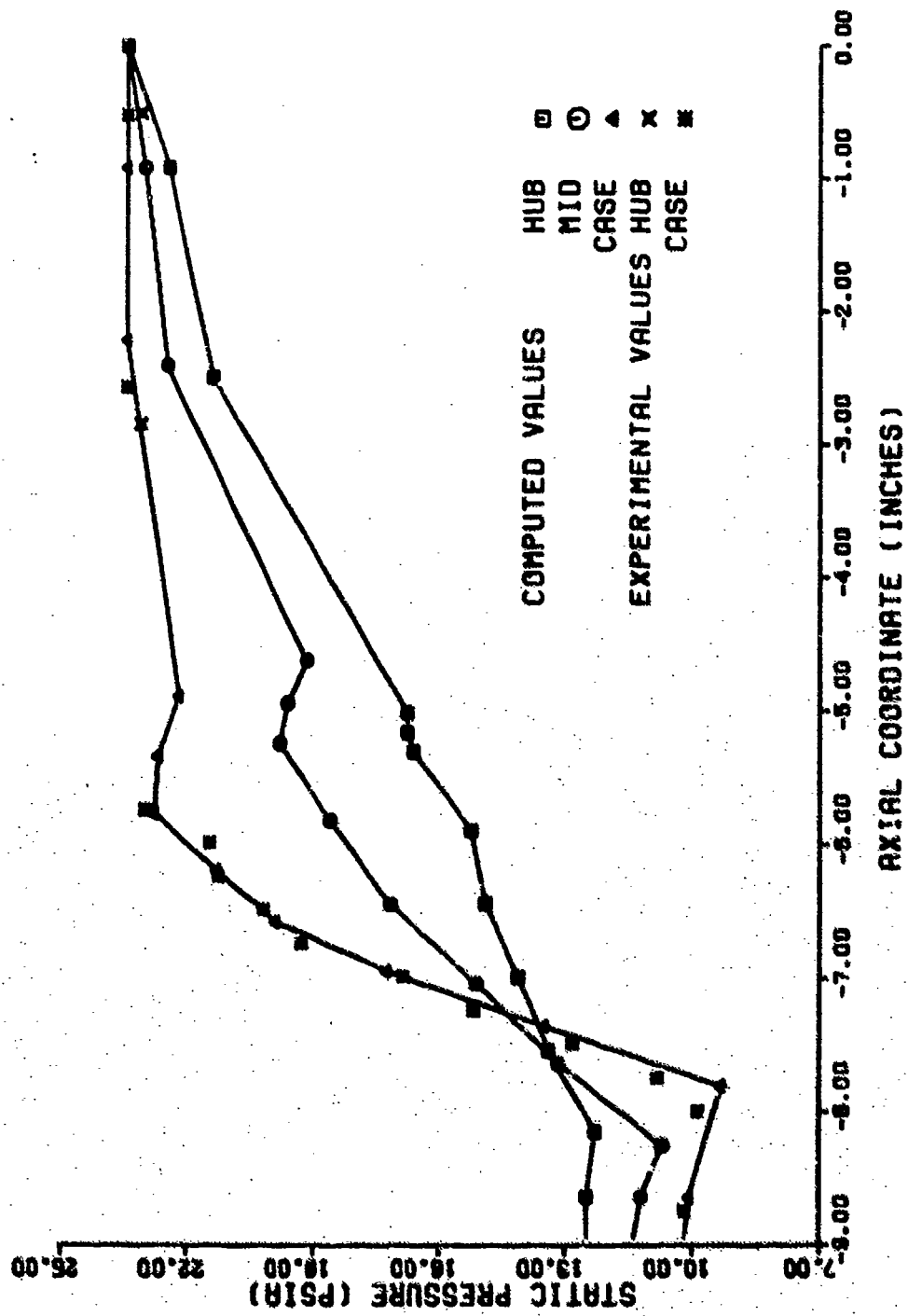


FIGURE 130. AXIAL STATIC PRESSURE DISTRIBUTION  
(PT. 602200201900 CASE 1)



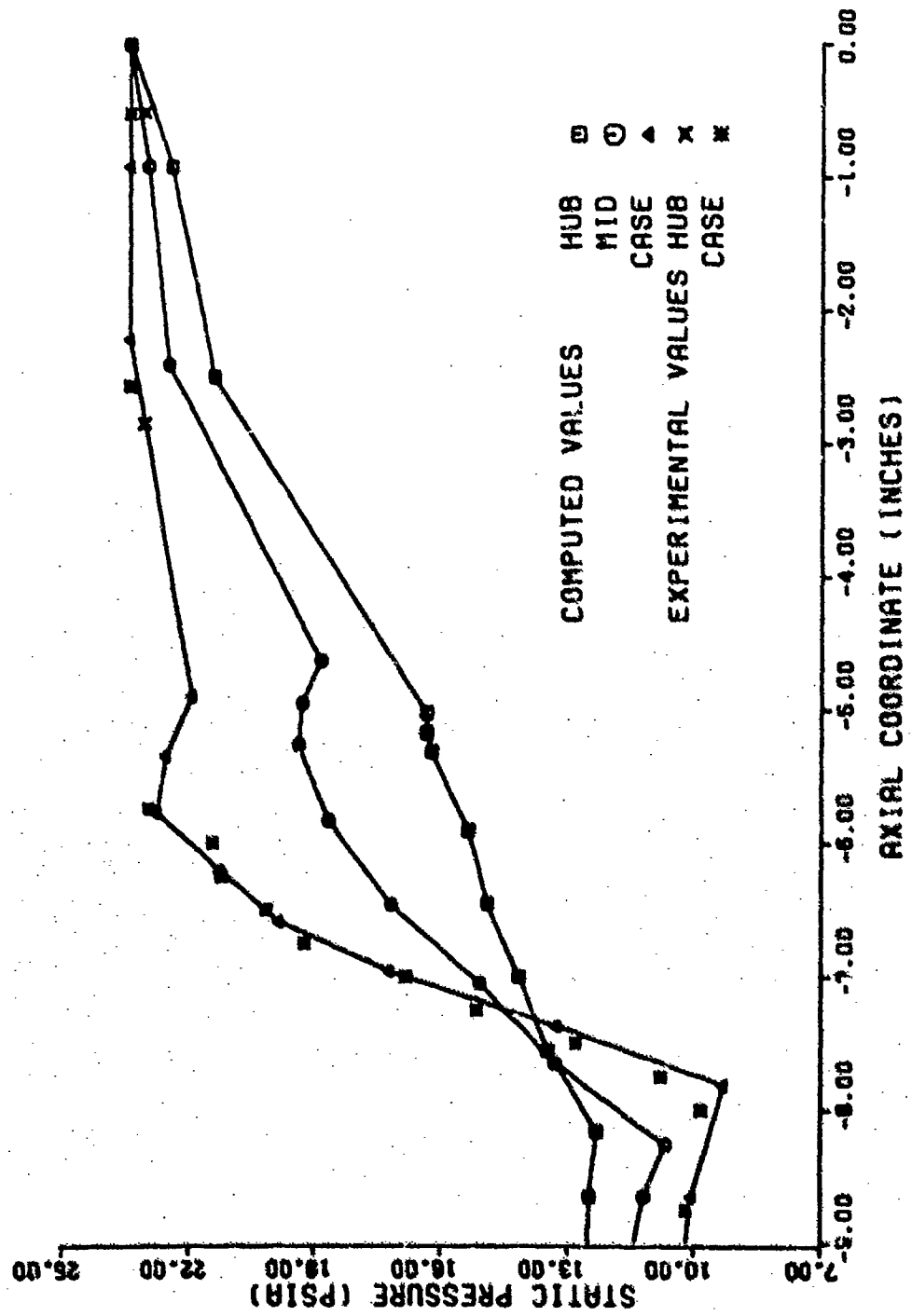


FIGURE 131. AXIAL STATIC PRESSURE DISTRIBUTION  
(PT. 602200201900 CASE 2)



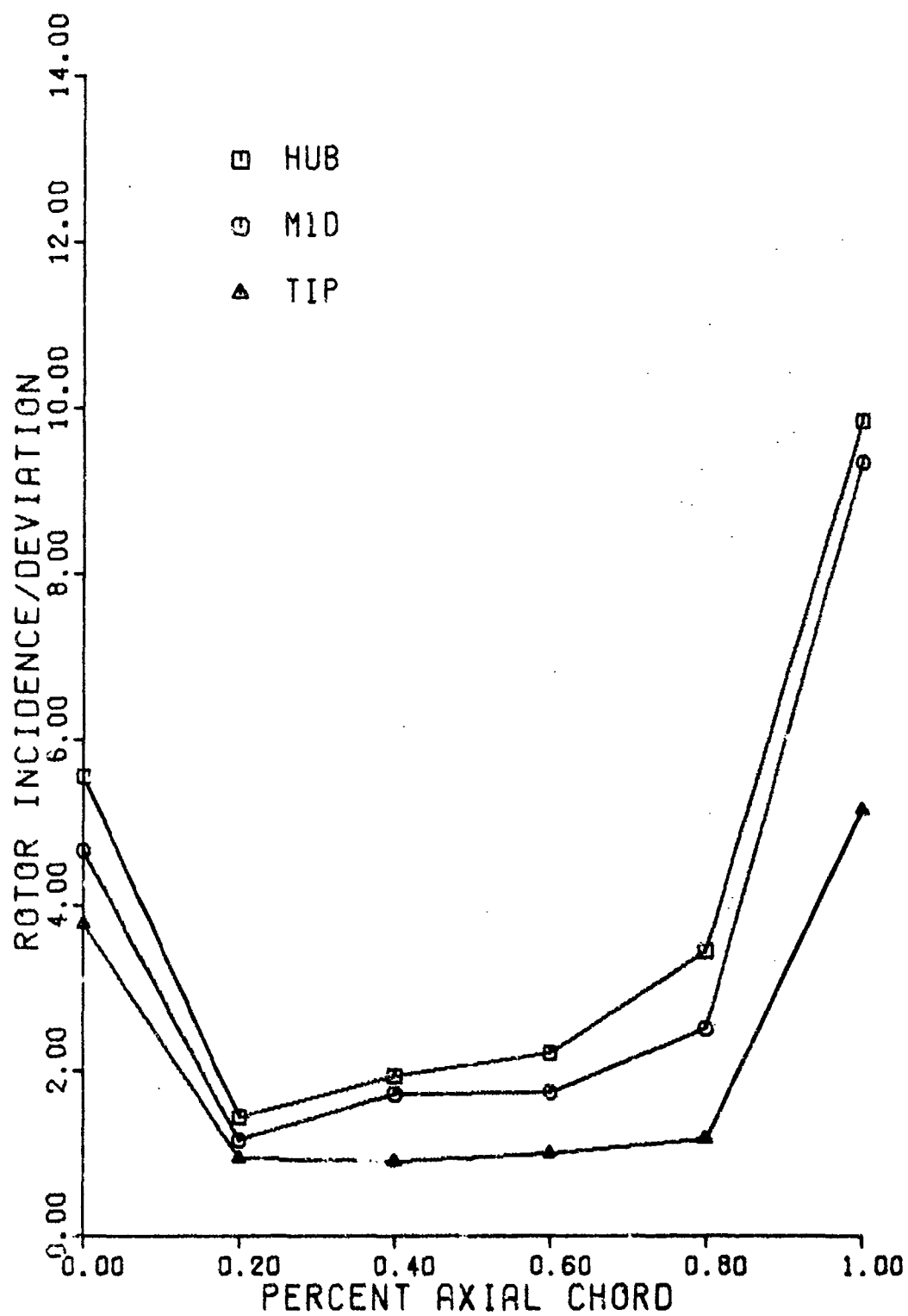


FIGURE 132. ROTOR THRU-BLADE DEVIATION ANGLE DISTRIBUTION (PT 602200201900 CASE 1)



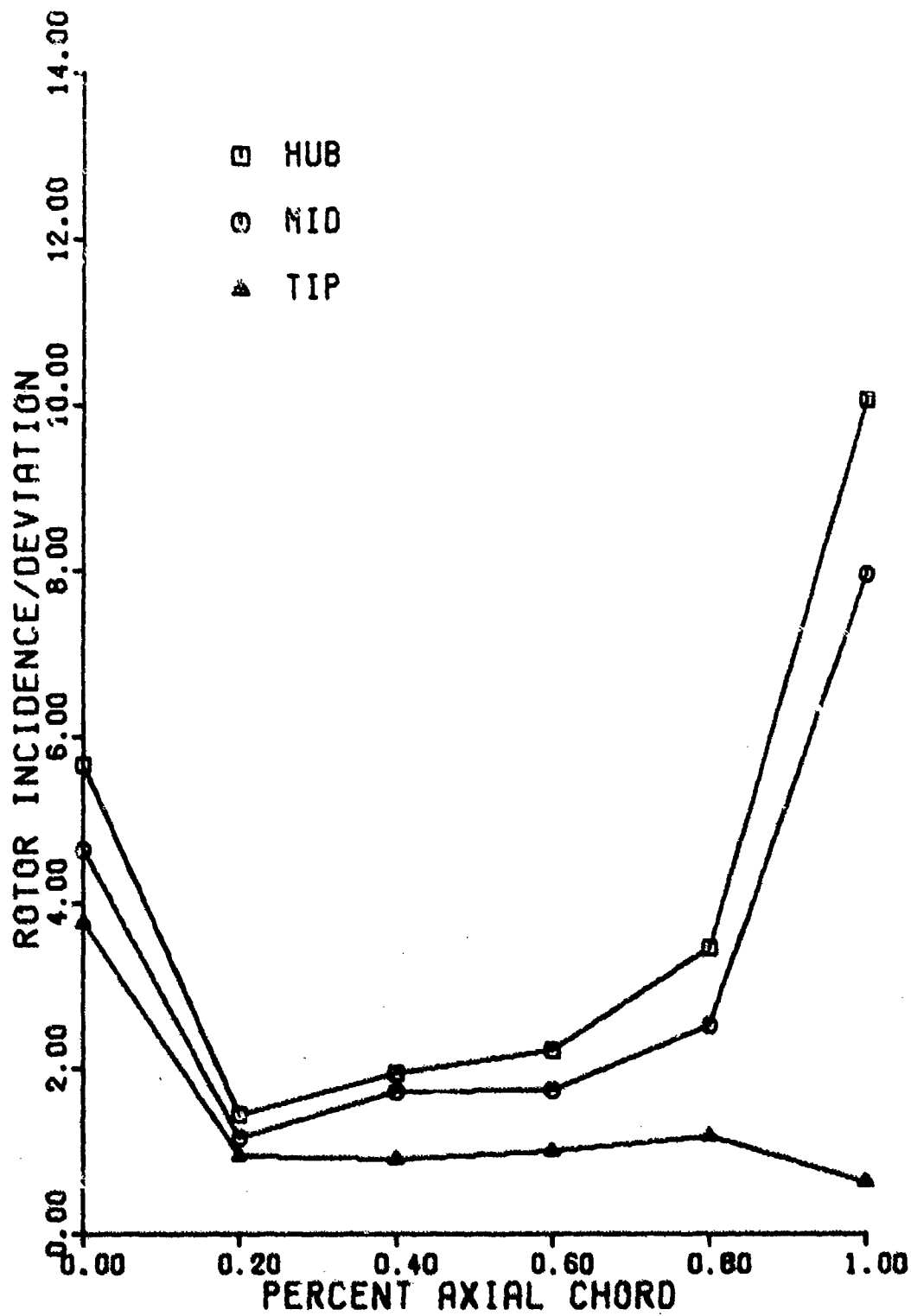


FIGURE 133. ROTOR THRU-BLADE DEVIATION ANGLE DISTRIBUTION (PT 602200201900 CASE 2)



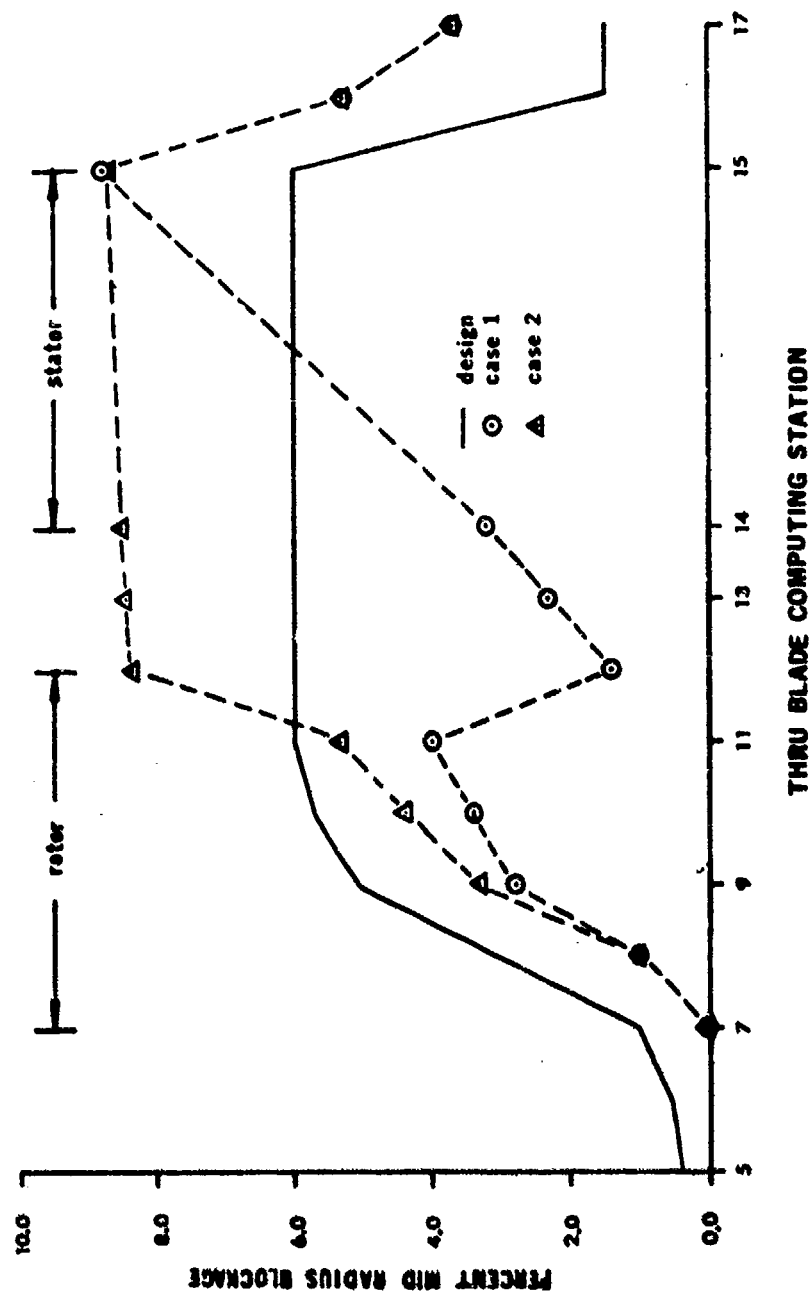


FIGURE 134. PERCENT MID RADIUS BLOCKAGE  
COMPARISON (CASE 1, CASE 2  
VS DESIGN)



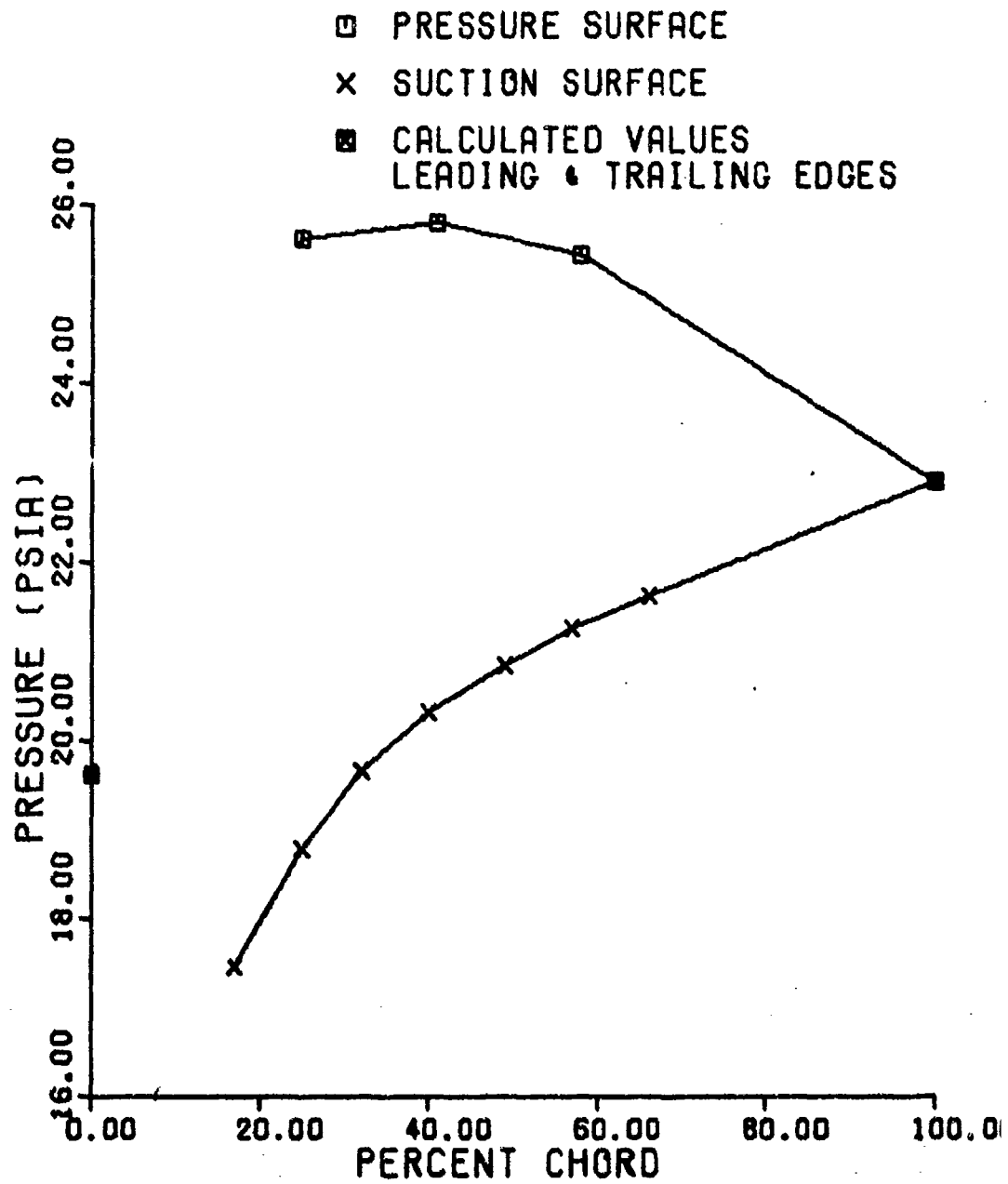


FIGURE 135. STATOR MID-SPAN SURFACE  
STATIC PRESSURE DISTRIBUTION  
FOR TEST POINT 601220201900



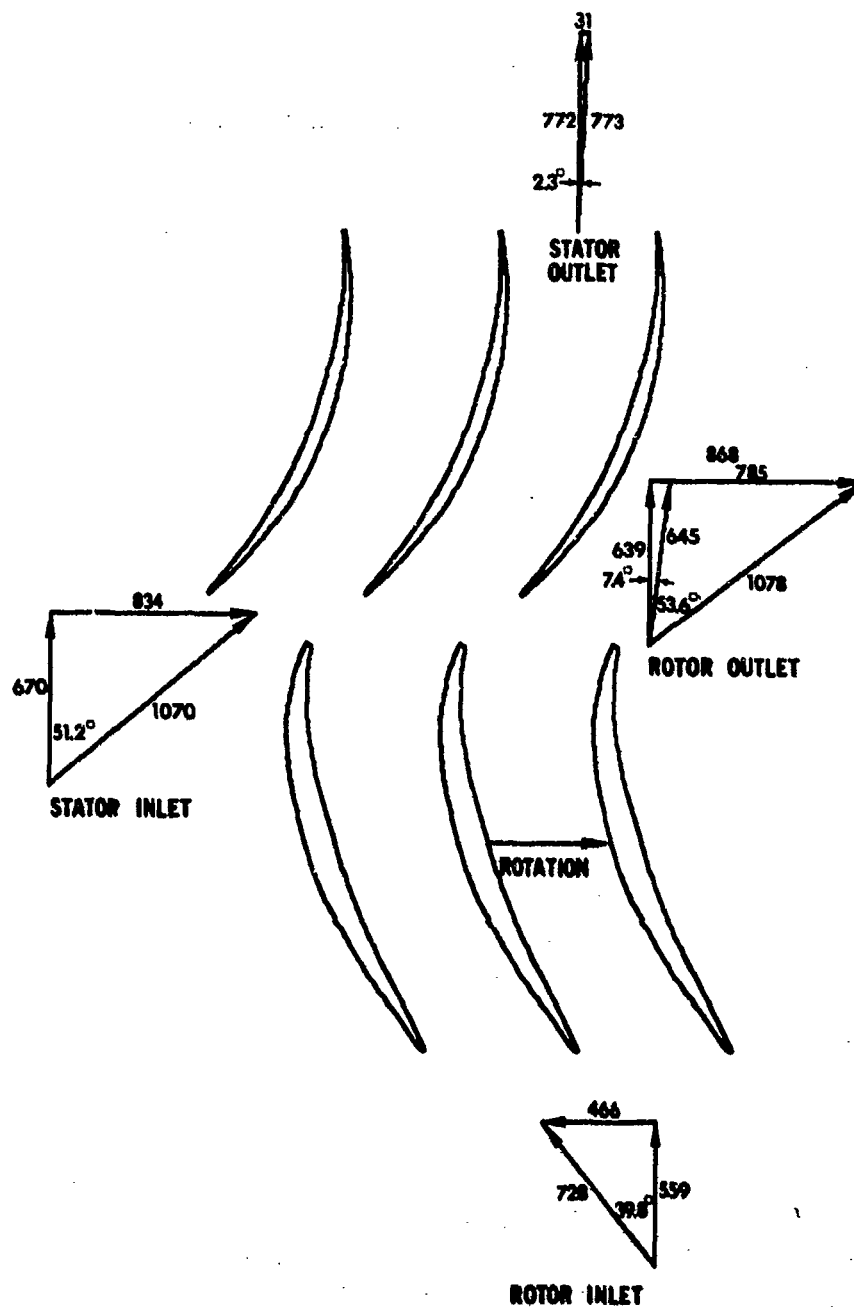


FIGURE 136. COMPRESSOR HUB GEOMETRY AND VELOCITY DIAGRAMS FOR TEST POINT 6012200201900



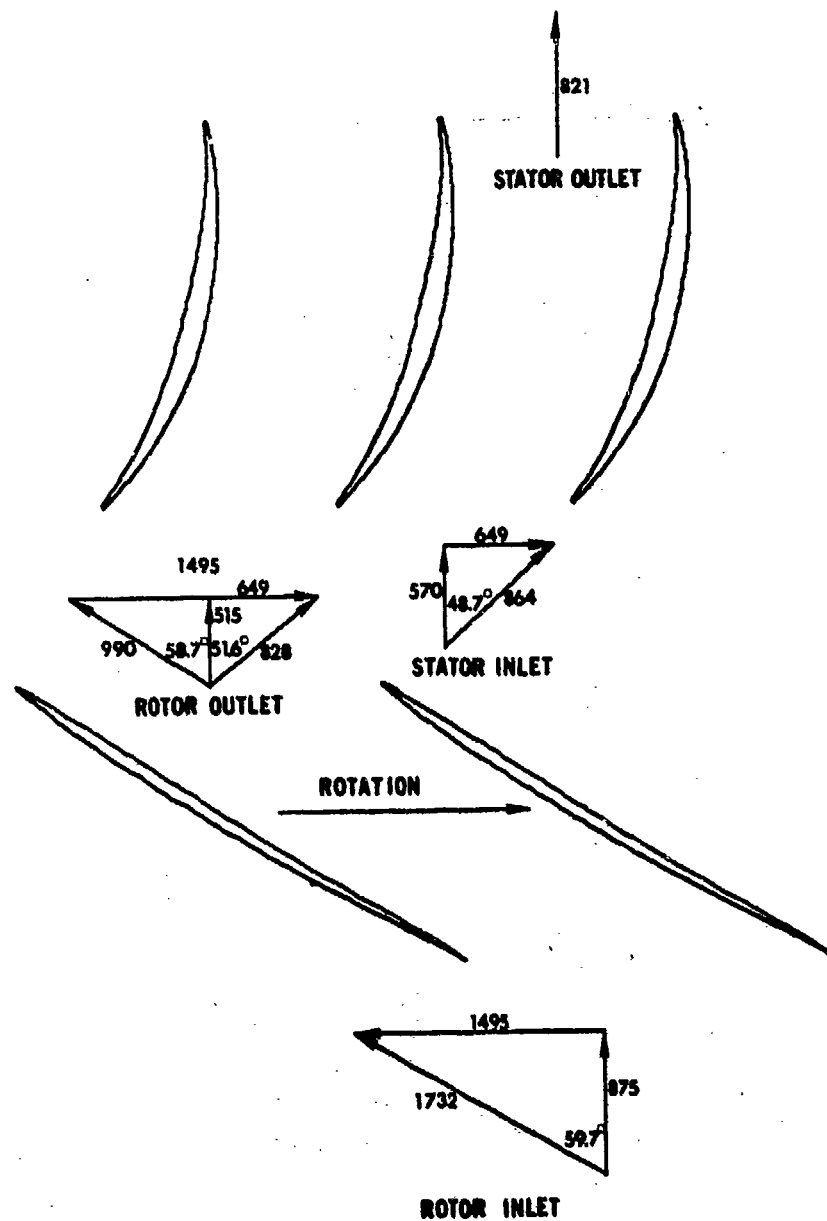


FIGURE 137. COMPRESSOR TIP GEOMETRY AND VELOCITY DIAGRAMS FOR TEST POINT 60122002019C0



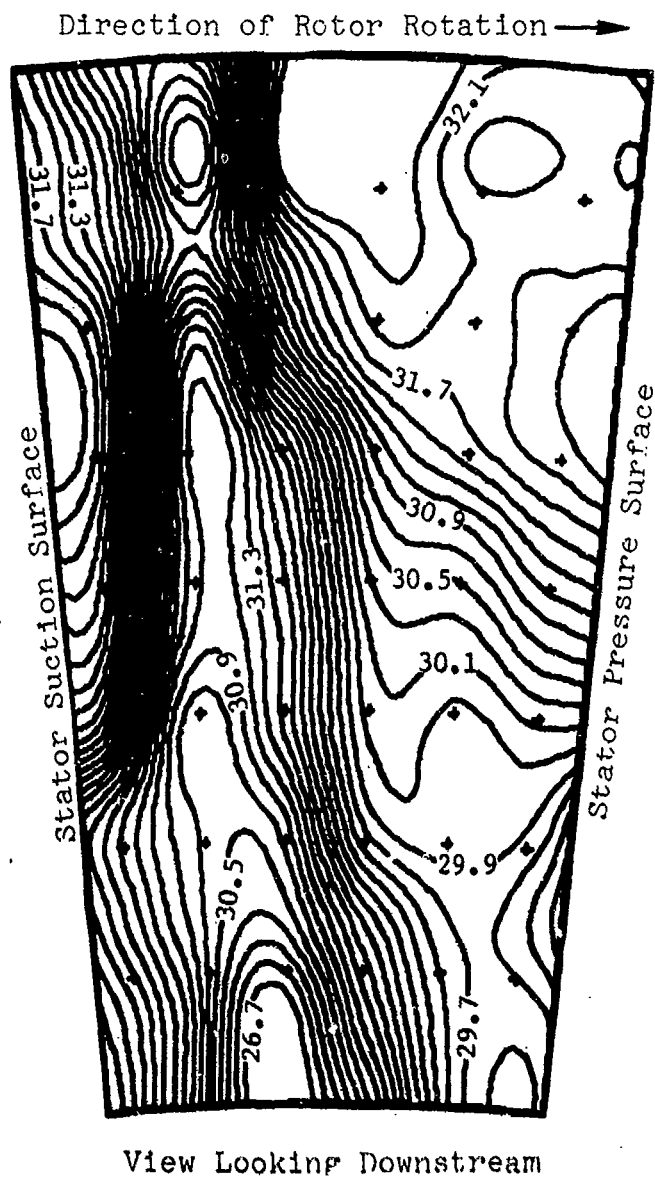


FIGURE 138. STAGE EXIT CONTOUR PLOT  
OF TOTAL PRESSURE FOR TEST  
POINT 6012200201900



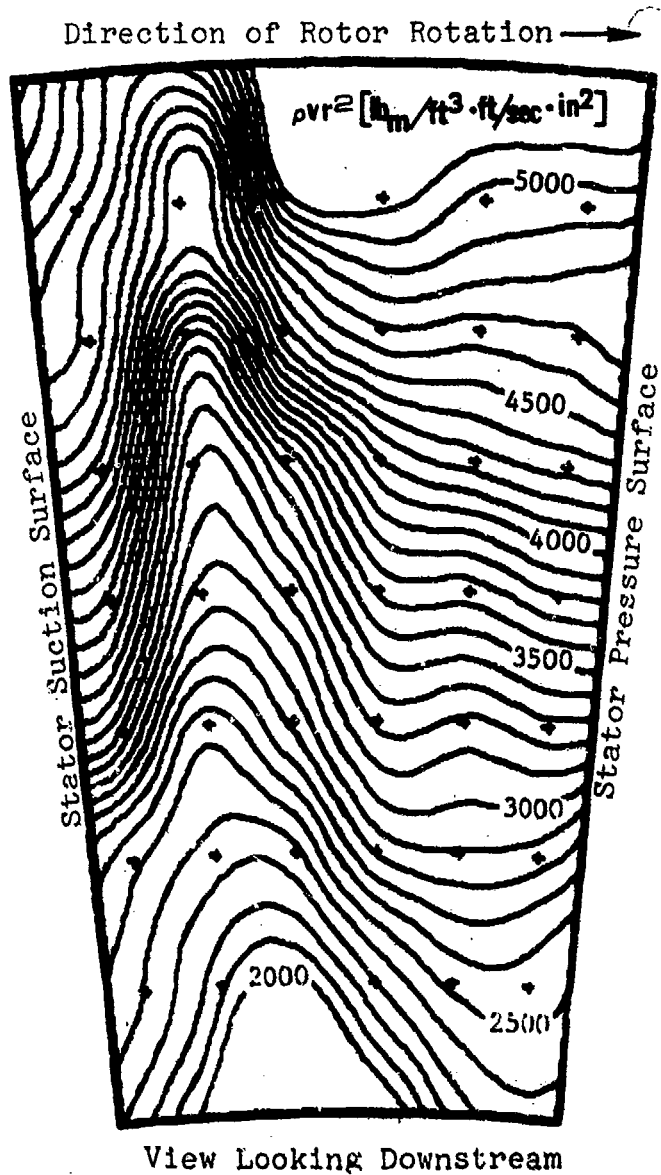


FIGURE 139. STAGE EXIT CONTOUR PLOT  
OF FLOW RATE PARAMETER FOR  
TEST POINT 6012200201900



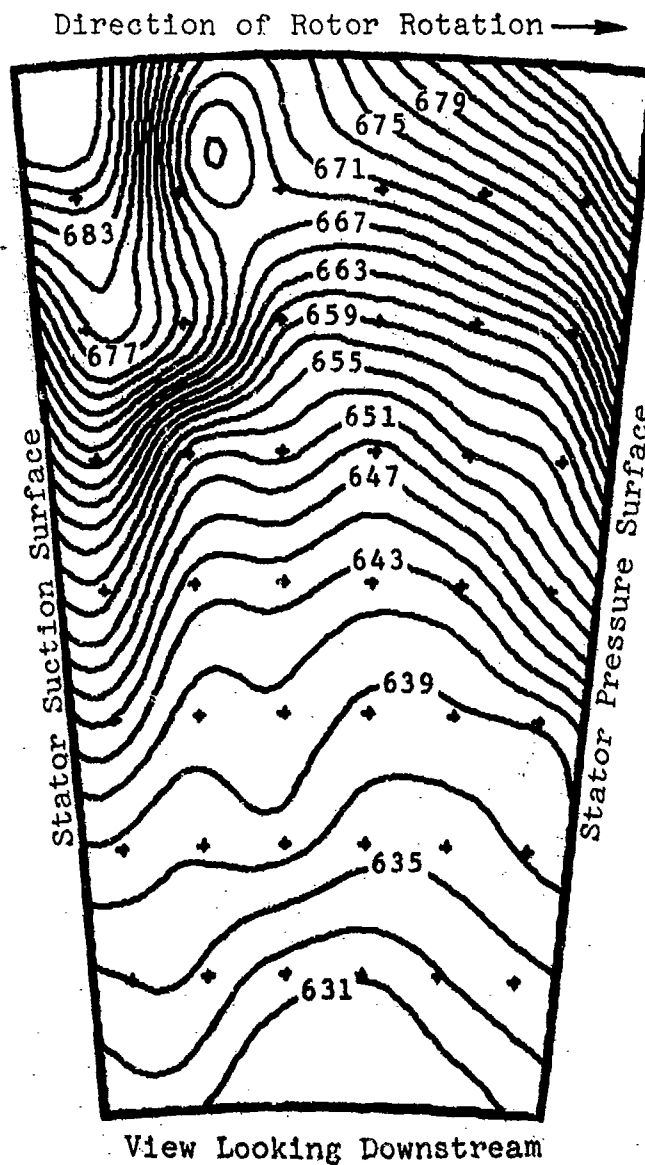


FIGURE 140. STAGE EXIT CONTOUR PLOT  
OF TOTAL TEMPERATURE FOR TEST  
POINT 6012200201900



TABLE XVI

IDENTIFICATION OF SYMBOLS  
FOR DESIGN POINT COMPARISON FIGURES

POINT IDENTIFICATION	SYMBOL
602200201900 ACROSS BLADE ANALYSIS	⊙
602200201900 THRU-BLADE CASE 2 ANALYSIS	Δ
DESIGN PREDICTION	—



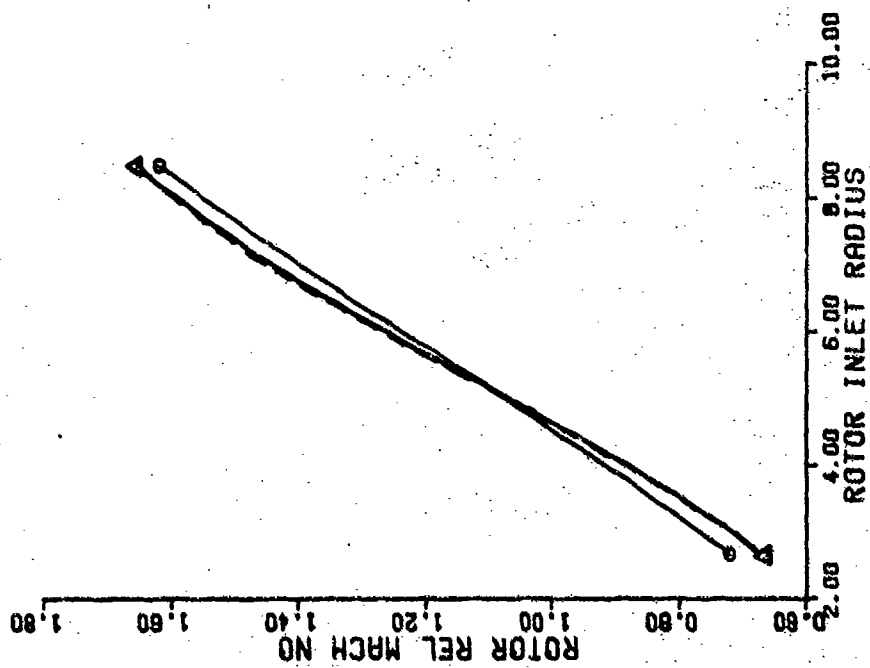


FIGURE 141 ROTOR RELATIVE MACH NUMBER VS INLET RADIUS (DESIGN POINT COMPARISON)

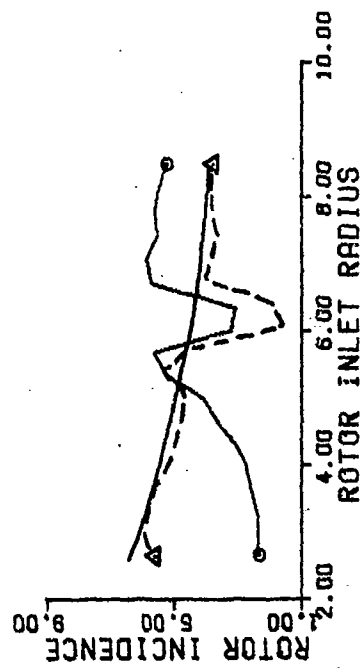


FIGURE 142 ROTOR INCIDENCE VS INLET RADIUS (DESIGN POINT COMPARISON)



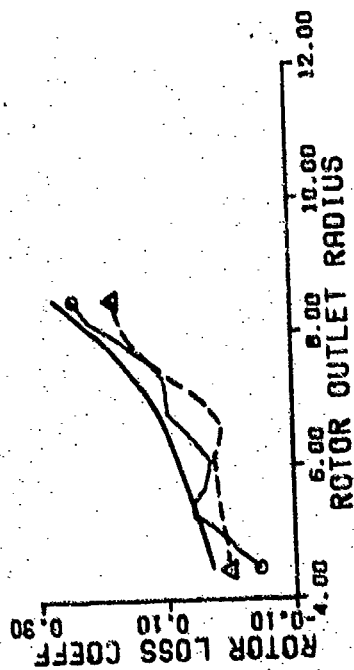


FIGURE 143 ROTOR LOSS COEFFICIENT VS OUTLET RADIUS (DESIGN POINT COMPARISON)

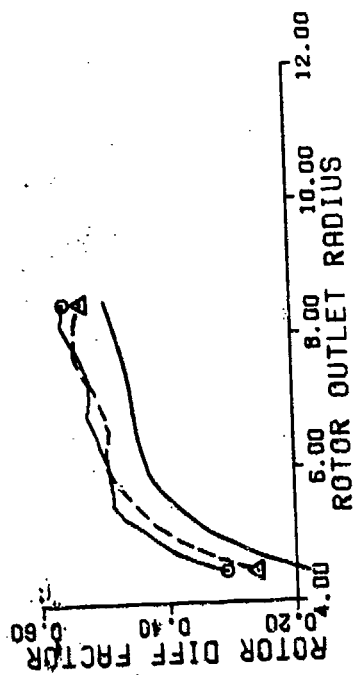


FIGURE 144 ROTOR DIFFUSION FACTOR VS OUTLET RADIUS (DESIGN POINT COMPARISON)



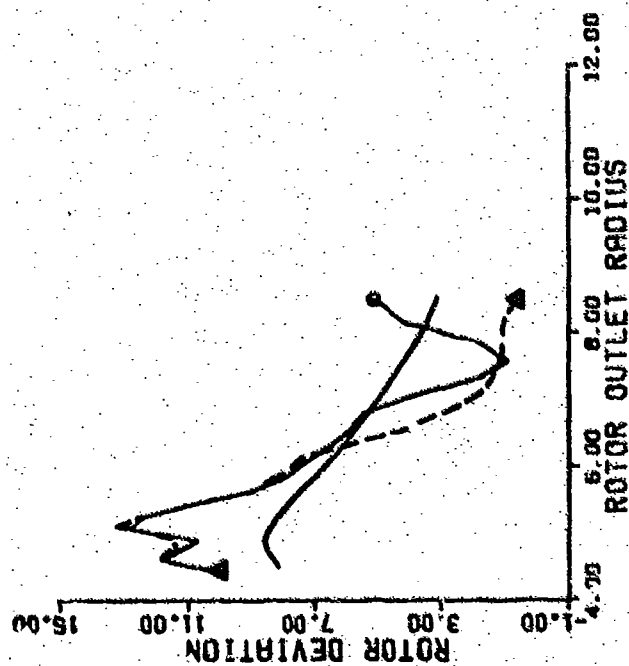


FIGURE 145 ROTOR DEVIATION VS OUTLET RADIUS  
(DESIGN POINT COMPARISON)

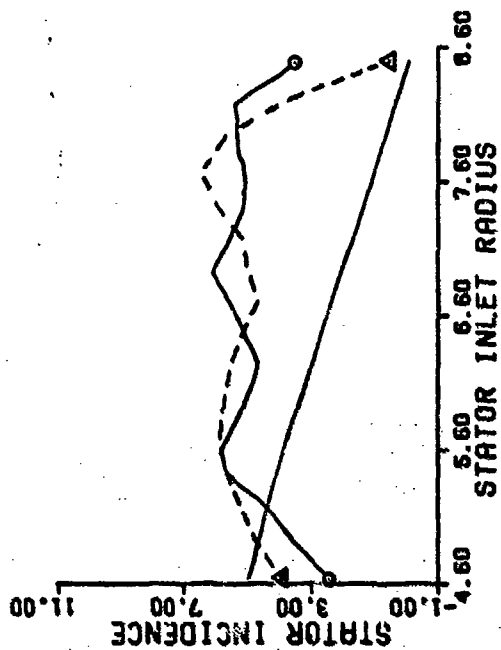


FIGURE 146 STATOR INCIDENCE VS INLET RADIUS  
(DESIGN POINT COMPARISON)



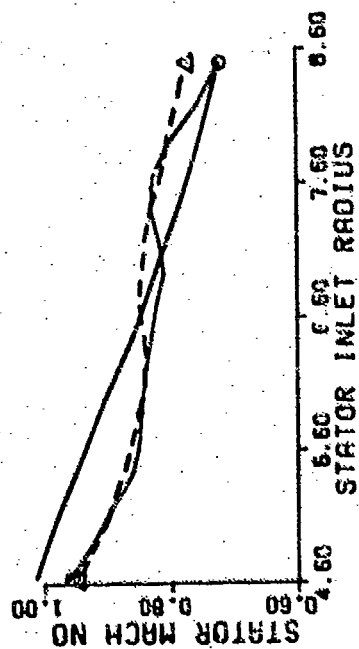


FIGURE 147 STATOR MACH NUMBER VS INLET RADIUS (DESIGN POINT COMPARISON)

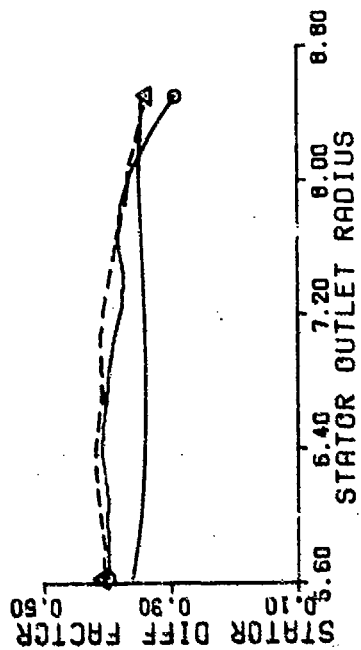


FIGURE 148 STATOR DIFFUSION FACTOR VS OUTLET RADIUS (DESIGN POINT COMPARISON)

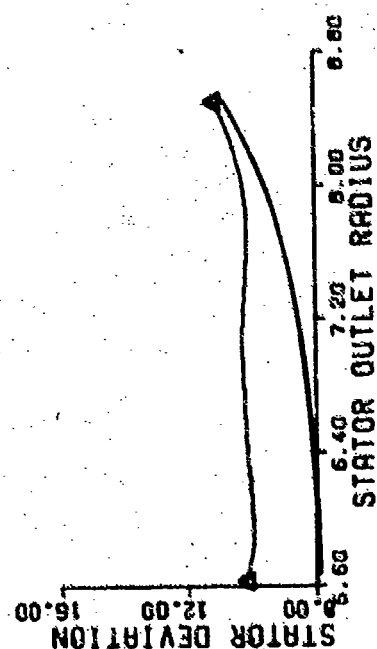


FIGURE 149 STATOR DEVIATION VS OUTLET RADIUS (DESIGN POINT COMPARISON)

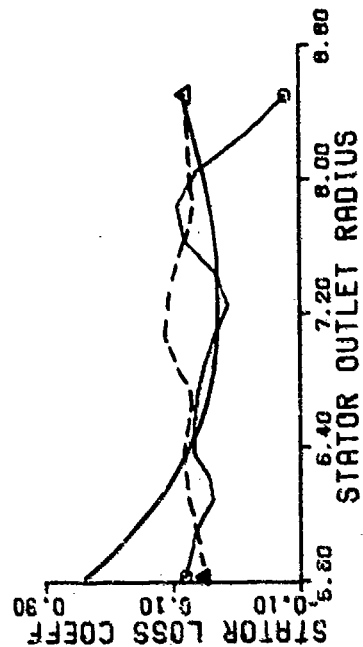


FIGURE 150 STATOR LOSS COEFFICIENT VS OUTLET RADIUS (DESIGN POINT COMPARISON)



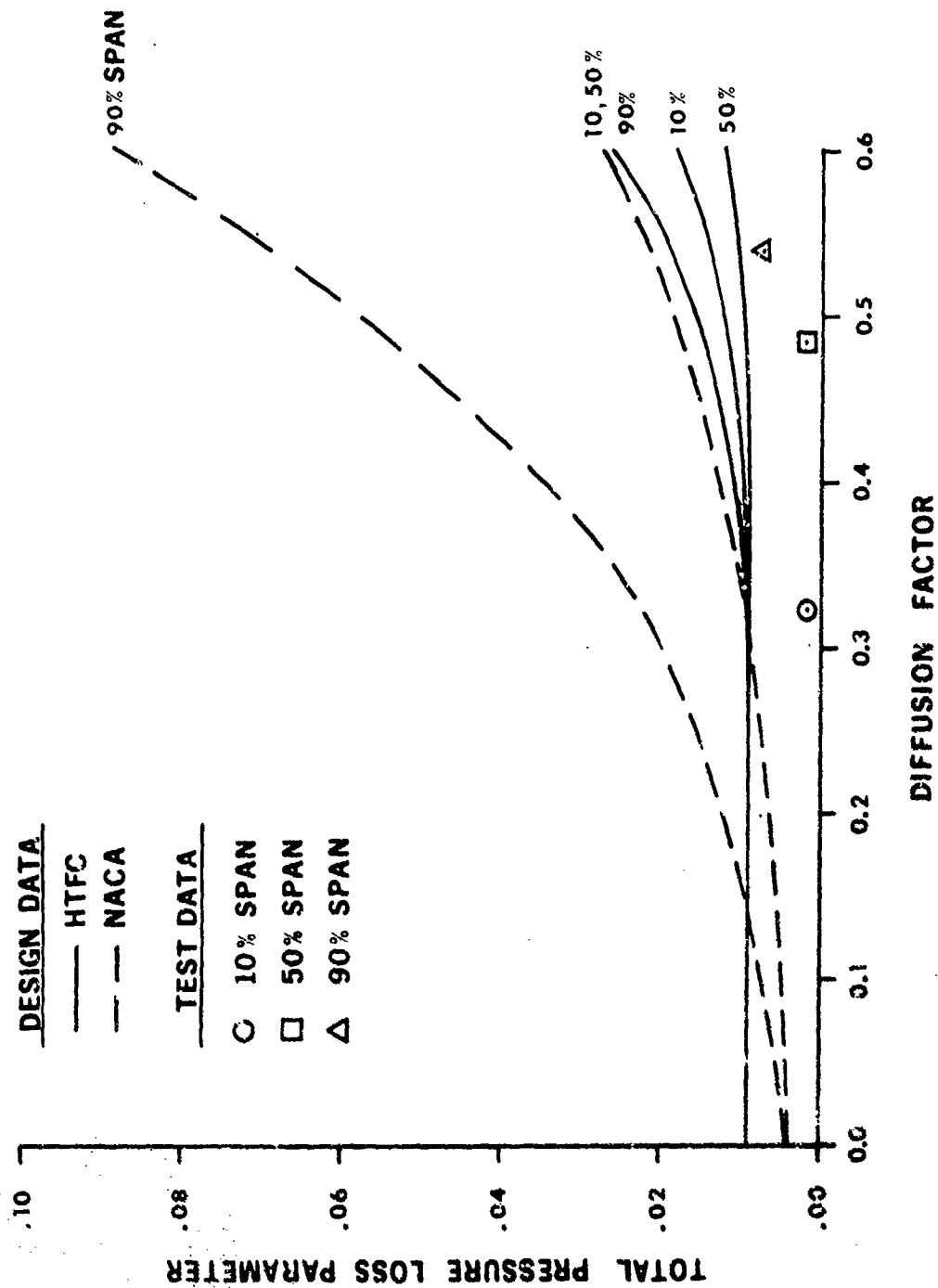


FIGURE 151. ROTOR TOTAL PRESSURE LOSS PARAMETER VS DIFFUSION FACTOR (PERCENT SPAN MEASURED FROM HUB)



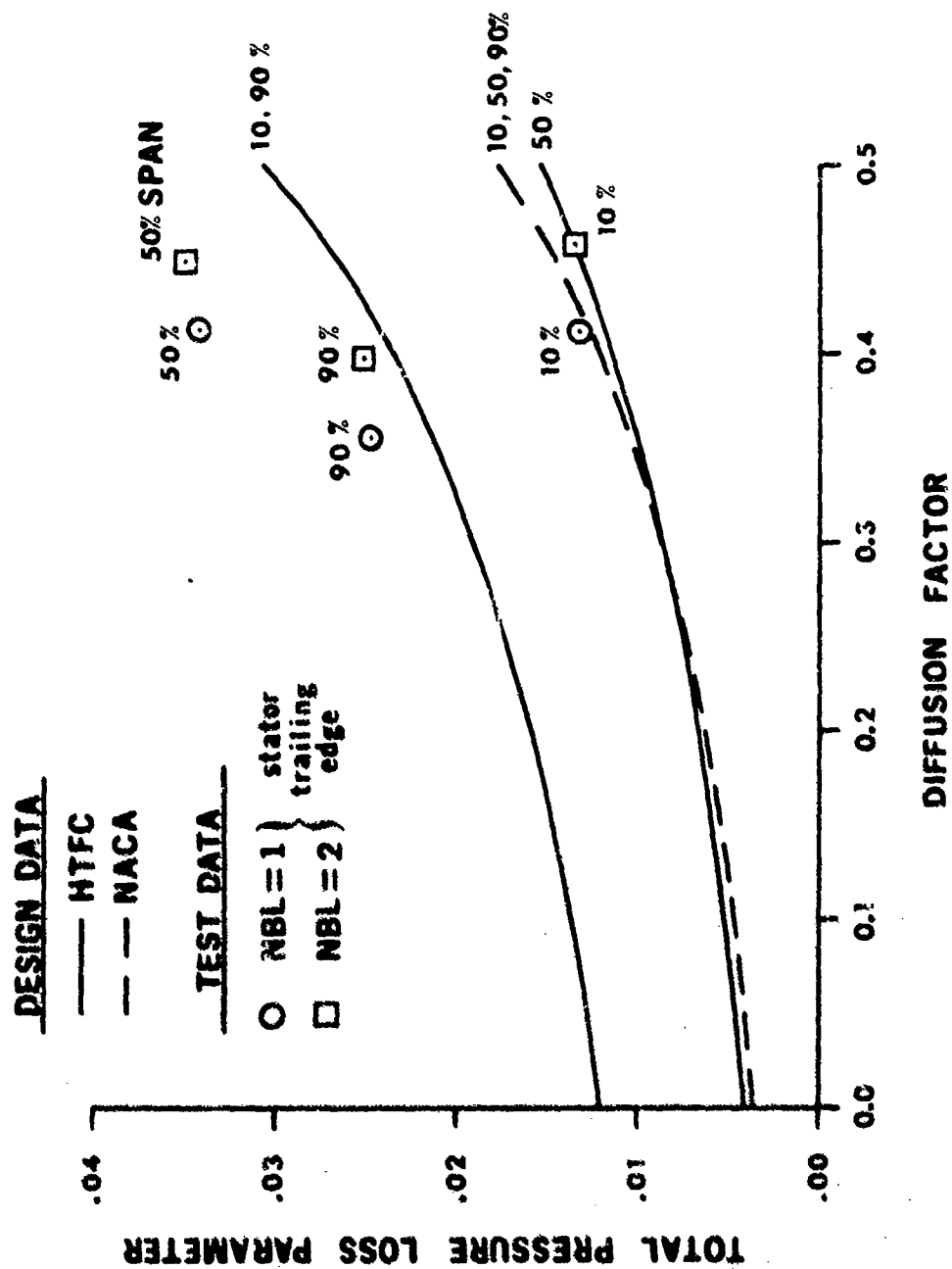


FIGURE 152. STATOR TOTAL PRESSURE LOSS PARAMETER VS DIFFUSION FACTOR (PERCENT SPAN MEASURED FROM HUB)



## APPENDIX A

### TEST POINT 602200201900 COMPUTER PRINTOUT (THRU-BLADE ANALYSIS)

This Appendix presents the aerodynamic results (in the form of computer printout) of the Phase II Thru-Blade analysis of test point 602200201900. Both Case 1 and Case 2 analysis of this point is presented, with the complete input data for both cases included at the beginning of each listing.



AERODYNAMIC RESULTS CASE 1  
TEST POINT 602200201900



# PROG80M U08280 --- AXIAL COMPRESSOR TEST DATA ANALYSIS

FIXED DATA PRINTOUT

HTFC CONFIGURATION #1, 100% SPEED, 019 THROTTLE THRU-BLADE 27APR76

NUMBER OF STATION LINES 17  
 NUMBER OF STATION LINES 21  
 MAXIMUM NUMBER OF ITERATIONS 20  
 MAXIMUM NUMBER OF ARBITRARY ITERATIONS 20  
 TOTAL PRESSURE SOURCE INDICATOR 1  
 TOTAL TEMPERATURE SOURCE INDICATOR 1  
 STATION NUMBER FOR ROTOR EXIT DATA 16  
 STATION NUMBER FOR STAGE EXIT DATA 20  
 NUMBER OF ROTOR BLADES 31  
 NUMBER OF STATOR BLADES 31  
 MINIMUM NUMBER OF LINES PER PAGE 60  
 NPLOT 2

## ANNULUS SPECIFICATION

STATION 1 SPECIFIED BY 2 POINTS

RSTN XSTN  
 0.0000 -10.4500  
 13.3000 -10.4500

STATION 2 SPECIFIED BY 2 POINTS

RSTN XSTN  
 0.0000 -14.9000  
 9.6000 -14.0000

STATION 3 SPECIFIED BY 2 POINTS

RSTN XSTN  
 0.0000 -10.6000  
 0.9600 -12.0000

STATION 4 SPECIFIED BY 2 POINTS

RSTN XSTN  
 1.5000 -9.7500  
 0.5500 -11.1500

STATION 5 SPECIFIED BY 2 POINTS

RSTN XSTN  
 2.0550 -9.1157  
 0.5000 -9.8433

STATION 6 SPECIFIED BY 2 POINTS

RSTN XSTN  
 2.3500 -8.6500  
 0.5000 -8.6500

STATION 7 SPECIFIED BY 6 POINTS

RSTN XSTN  
 2.6514 -8.1000  
 3.0023 -8.2043  
 3.0097 -8.2003  
 3.7989 -9.1010  
 6.5000 -7.9015  
 6.5000 -7.0110



STATION 8 SPECIFIED BY 4 POINTS  
 RSTN XSTN  
 3.0363 -7.5550  
 5.0700 -7.6500  
 6.4800 -7.6100  
 8.5000 -7.3750

STATION 9 SPECIFIED BY 4 POINTS  
 RSTN XSTN  
 3.3893 -7.0000  
 5.3850 -7.0450  
 6.3650 -7.0650  
 8.5000 -6.9810

STATION 10 SPECIFIED BY 4 POINTS  
 RSTN XSTN  
 3.7385 -6.4510  
 5.4200 -6.4510  
 6.6500 -6.5200  
 8.5000 -6.5900

STATION 11 SPECIFIED BY 4 POINTS  
 RSTN XSTN  
 4.0884 -5.9810  
 5.7000 -5.9810  
 6.7250 -5.9500  
 8.5000 -6.2100

STATION 12 SPECIFIED BY 9 POINTS  
 RSTN XSTN  
 4.4612 -5.3150  
 4.6800 -5.2700  
 4.8800 -5.2700  
 5.0800 -5.1717  
 5.1064 -5.1717  
 5.1852 -5.2465  
 5.7345 -5.2700  
 7.0661 -5.5015  
 8.5000 -5.7840

STATION 13 SPECIFIED BY 4 POINTS  
 RSTN XSTN  
 4.5534 -5.1700  
 5.2000 -5.0800  
 5.8000 -5.0800  
 6.5000 -5.3500

STATION 14 SPECIFIED BY 4 POINTS  
 RSTN XSTN  
 4.6435 -5.9750  
 5.2500 -5.7750  
 5.8200 -4.6500  
 6.5000 -4.9000

STATION 15 SPECIFIED BY 2 POINTS  
 RSTN XSTN  
 5.6314 -2.4999  
 8.5000 -2.2174



STATION 16 SPECIFIED BY 2 POINTS

RSTN XSTN  
5.7905 -.9200  
8.5000 -.9200

STATION 17 SPECIFIED BY 2 POINTS

RSTN XSTN  
5.7906 0.0000  
8.5000 0.0000

STATION CALCULATION SPECIFICATION AND BLADING DATA

STATION 2 NCALC = 0 NDATA = -0 NBL = -0  
STATION 3 NCALC = 0 NDATA = -0 NBL = -0  
STATION 4 NCALC = 0 NDATA = -0 NBL = -0  
STATION 5 NCALC = 0 NDATA = -0 NBL = -0  
STATION 6 NCALC = 0 NDATA = -0 NBL = -0  
STATION 7 NCALC = 1 NDATA = 13 NBL = 0

RADIUS	BETA	EPSILON	BLOCKAGE	THETA
2.5784	-37.2742	1.5001	.04431	.2473
3.0923	-40.5356	-.0115	.02009	.2450
3.6087	-42.7018	-.5848	.01663	.2461
4.1276	-44.8249	-3.0603	.01427	.2493
4.6521	-46.9452	-1.6131	.00976	.2564
5.1690	-49.0673	-.4674	.00837	.2564
5.6881	-51.185	.6891	.00835	.2535
6.2095	-53.3447	3.3606	.00853	.2482
6.7304	-55.4976	5.8370	.00802	.2417
7.2508	-57.6410	6.9390	.00806	.2342
7.7708	-59.7839	7.7487	.00871	.2290
8.2908	-61.9273	8.0574	.00571	.2179

STATION 8 NCALC = 2 NDATA = 13 NBL = 0

RADIUS	BETA	EPSILON	BLOCKAGE	THETA
2.5046	-33.0728	-9.0542	.23679	.0620
3.0114	-34.9055	-6.5516	.16608	.0071
3.5184	-36.7144	-4.7090	.12832	.1024
4.0256	-38.5539	-4.7094	.10676	.1129
4.5331	-40.3794	-3.3637	.09351	.1233
5.0415	-42.2364	-2.4478	.08236	.1308
5.5505	-44.1286	-1.9121	.06353	.1356
6.0588	-46.0462	1.3227	.05514	.1351
6.5673	-47.9903	1.9459	.04885	.1436
7.0763	-49.9603	2.7423	.04466	.1420
7.5856	-51.9639	3.5735	.04100	.1337
8.0956	-53.9995	4.4391	.03691	.13











OUTLET RADIUS = 0.0000

M-COORD      DEVIATION ANGLE (DEGREES)

0.0000      0.0000  
1.0000      1.0000

NUMBER OF TEST POINTS TO BE ANALYSED = 1

PSCALE= 3.00 PLOWR= 7.00 DAMPF= 5.00 NSAVE= 1

NMAX= 0 MFORCE= 0 NEX= 2



# TEST DATA PRINQUI FOR POINT NO. 1

TEST POINT TITLE

GAS CONSTANT  
AIR MASS FRACTION  
FLOW RATE  
ROTOR SPEED  
INLET TOTAL PRESSURE  
INLET TOTAL TEMPERATURE  
INLET IN(SID)  
P IN/IN(SID)

\* 682200201900  
\* 53.4842  
\* 62.6422  
\* 7.0138  
\* 5.1878  
\* .3230  
\* .8646

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

RADIUS  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250

PRESSURE  
29.1712  
29.1912  
29.1912  
29.1912  
29.1912  
29.1912  
29.1912  
29.1912  
29.1912

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

RADIUS  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250

TEMPERATURE  
631.151  
631.151  
631.151  
631.151  
631.151  
631.151  
631.151  
631.151  
631.151

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

RADIUS  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250

MEAN PRES  
26.6423  
26.6423  
26.6423  
26.6423  
26.6423  
26.6423  
26.6423

PEAK PRES  
29.4823  
29.4823  
29.4823  
29.4823  
29.4823  
29.4823  
29.4823

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

RADIUS  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250  
5.1250

TEMPERATURE  
633.193  
633.193  
633.193  
633.193  
633.193  
633.193  
633.193

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

RADIUS  
7.6220  
7.6220  
7.6220

ANGLE  
1.383  
1.383  
1.383



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

10.1659  
10.6351  
10.6065  
13.1570  
16.3270  
19.2617  
20.1840  
21.4637  
22.9983  
23.4485  
23.4485

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8428  
-2.5080  
23.1069  
23.1069

# DISTRIBUTED BLOCKAGE SPECIFICATION

STATION	BLOCKAGE	DIST. FACTOR	MIS. ADD. DEVIATION	DIST. FACTOR	FRAC. IE BLOCKAGE
1	0.0000	1.0000	-0.000	0.000	-0.000
2	0.0000	1.0000	-0.000	0.000	-0.000
3	0.0000	1.0000	-0.000	0.000	-0.000
4	0.0000	1.0000	-0.000	0.000	-0.000
5	0.0000	1.0000	-0.000	0.000	-0.000
6	0.0000	1.0000	-0.000	0.000	-0.000
7	0.0000	1.0000	-0.000	0.000	-0.000
8	0.0000	1.0000	-0.000	0.000	-0.000
9	0.0000	1.0000	-0.000	0.000	-0.000
10	0.0000	1.0000	-0.000	0.000	-0.000
11	0.0000	1.0000	-0.000	0.000	-0.000
12	0.0000	1.0000	-0.000	0.000	-0.000
13	0.0000	1.0000	-0.000	0.000	-0.000
14	0.0000	1.0000	-0.000	0.000	-0.000
15	0.0000	1.0000	-0.000	0.000	-0.000
16	0.0000	1.0000	-0.000	0.000	-0.000
17	0.0000	1.0000	-0.000	0.000	-0.000

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

NJUMP= 0



PASS 22 STATION 0 UNCONVERGED FLOW/SPECIFIED FLOW = .99995 VOLD/VNEM(HUB) = 1.00046 VOLD/VNEM(CASE) = 1.00009

STATION	1	FLOW FIELD DESCRIPTION
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
30	30	30
31	31	31
32	32	32
33	33	33
34	34	34
35	35	35
36	36	36
37	37	37
38	38	38
39	39	39
40	40	40
41	41	41
42	42	42
43	43	43
44	44	44
45	45	45
46	46	46
47	47	47
48	48	48
49	49	49
50	50	50
51	51	51
52	52	52
53	53	53
54	54	54
55	55	55
56	56	56
57	57	57
58	58	58
59	59	59
60	60	60
61	61	61
62	62	62
63	63	63
64	64	64
65	65	65
66	66	66
67	67	67
68	68	68
69	69	69
70	70	70
71	71	71
72	72	72
73	73	73
74	74	74
75	75	75
76	76	76
77	77	77
78	78	78
79	79	79
80	80	80
81	81	81
82	82	82
83	83	83
84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
93	93	93
94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

[illegible][illegible]







## STATION 5 FLOW FIELD DESCRIPTION

STREAM -LINE	RADIUS	---VELOCITIES--- MERID TANGEN	---TOTAL	---TEMPERATURES--- TOTAL	---PRESSURES--- TOTAL	MACH NO	---ANGLES--- WHIRL SLOPE	RADIUS OF CURVATURE	SPECIFIC WEIGHT
1	2.0560	0.00	531.31	518.708	14.694	4.663	35.65	-6.378	.0679
2	2.1810	0.00	529.102	518.708	14.694	4.813	35.443	-8.1702	.0681
3	2.2939	0.00	526.80	518.708	14.694	4.820	30.743	-15.3145	.0681
4	2.4753	0.00	533.551	518.708	14.694	4.805	27.10	-16.3702	.0679
5	2.7058	0.00	545.61	518.708	14.694	4.801	23.67	-13.4953	.0679
6	2.9244	0.00	557.651	518.708	14.694	4.814	20.87	-11.323	.0654
7	3.1277	0.00	569.65	518.708	14.694	4.819	18.46	-11.323	.0654
8	3.3148	0.00	581.65	518.708	14.694	4.821	16.22	-11.323	.0654
9	3.4810	0.00	593.65	518.708	14.694	4.821	14.23	-11.323	.0654
10	3.6263	0.00	605.65	518.708	14.694	4.821	12.46	-11.323	.0654
11	3.7533	0.00	617.65	518.708	14.694	4.821	10.91	-11.323	.0654
12	3.8653	0.00	629.65	518.708	14.694	4.821	9.57	-11.323	.0654
13	3.9633	0.00	641.65	518.708	14.694	4.821	8.43	-11.323	.0654
14	4.0473	0.00	653.65	518.708	14.694	4.821	7.46	-11.323	.0654
15	4.1173	0.00	665.65	518.708	14.694	4.821	6.62	-11.323	.0654
16	4.1733	0.00	677.65	518.708	14.694	4.821	5.91	-11.323	.0654
17	4.2153	0.00	689.65	518.708	14.694	4.821	5.31	-11.323	.0654
18	4.2433	0.00	701.65	518.708	14.694	4.821	4.81	-11.323	.0654
19	4.2573	0.00	713.65	518.708	14.694	4.821	4.41	-11.323	.0654
20	4.2573	0.00	725.65	518.708	14.694	4.821	4.11	-11.323	.0654
21	4.2433	0.00	737.65	518.708	14.694	4.821	3.91	-11.323	.0654

## STATION 6 FLOW FIELD DESCRIPTION

STREAM -LINE	RADIUS	---VELOCITIES--- MERID TANGEN	---TOTAL	---TEMPERATURES--- TOTAL	---PRESSURES--- TOTAL	MACH NO	---ANGLES--- WHIRL SLOPE	RADIUS OF CURVATURE	SPECIFIC WEIGHT
1	3.009	0.00	531.31	518.708	14.694	4.81	32.11	-37.169	.0679
2	3.1983	0.00	533.551	518.708	14.694	4.805	31.401	-58.117	.0679
3	3.4203	0.00	545.61	518.708	14.694	4.801	27.05	-129.4398	.0679
4	3.6834	0.00	557.65	518.708	14.694	4.814	22.05	-114.296	.0661
5	3.9834	0.00	569.65	518.708	14.694	4.819	18.46	-114.296	.0661
6	4.3173	0.00	581.65	518.708	14.694	4.821	16.22	-114.296	.0661
7	4.6810	0.00	593.65	518.708	14.694	4.821	14.23	-114.296	.0661
8	5.0733	0.00	605.65	518.708	14.694	4.821	12.46	-114.296	.0661
9	5.4933	0.00	617.65	518.708	14.694	4.821	10.91	-114.296	.0661
10	5.9433	0.00	629.65	518.708	14.694	4.821	9.57	-114.296	.0661
11	6.4233	0.00	641.65	518.708	14.694	4.821	8.43	-114.296	.0661
12	6.9333	0.00	653.65	518.708	14.694	4.821	7.46	-114.296	.0661
13	7.4733	0.00	665.65	518.708	14.694	4.821	6.62	-114.296	.0661
14	8.0433	0.00	677.65	518.708	14.694	4.821	5.91	-114.296	.0661
15	8.6433	0.00	689.65	518.708	14.694	4.821	5.31	-114.296	.0661
16	9.2733	0.00	701.65	518.708	14.694	4.821	4.81	-114.296	.0661
17	9.9333	0.00	713.65	518.708	14.694	4.821	4.41	-114.296	.0661
18	10.6233	0.00	725.65	518.708	14.694	4.821	4.11	-114.296	.0661
19	11.3433	0.00	737.65	518.708	14.694	4.821	3.91	-114.296	.0661
20	12.0933	0.00	749.65	518.708	14.694	4.821	3.71	-114.296	.0661
21	12.8733	0.00	761.65	518.708	14.694	4.821	3.51	-114.296	.0661



[illegible]



[illegible]



[illegible]



[illegible]

## BLADE DATA

[illegible]

STATION 10 INTEGRATED PERFORMANCE PRESSURE RATIO = 1.740 ISEN. EFF. = .926 POLY. EFF. = .931 DELTA T ON T = .105



STATION	11	FLOW FIELD DESCRIPTION

[illegible]**SLABE DATA**

LOCAT	SECTION	WIRE-ANGL	REL FLOW	DEVIATION	LOSS	BLADE	RELATIVE	RELATIVE	RELATIVE	PRESSURE	DELTA T	ISENTROPIC	POLYTROPIC
ION	SECT	LES	ANGLE	INCLNCE	COEFF	ANGLE	MACH NO	VELOCITY	PRESSURE	RATIO	ON T	EFFICIENCY	EFFICIENCY
1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9	9	9	9	9
10	10	10	10	10	10	10	10	10	10	10	10	10	10
11	11	11	11	11	11	11	11	11	11	11	11	11	11
12	12	12	12	12	12	12	12	12	12	12	12	12	12
13	13	13	13	13	13	13	13	13	13	13	13	13	13
14	14	14	14	14	14	14	14	14	14	14	14	14	14
15	15	15	15	15	15	15	15	15	15	15	15	15	15
16	16	16	16	16	16	16	16	16	16	16	16	16	16
17	17	17	17	17	17	17	17	17	17	17	17	17	17
18	18	18	18	18	18	18	18	18	18	18	18	18	18
19	19	19	19	19	19	19	19	19	19	19	19	19	19
20	20	20	20	20	20	20	20	20	20	20	20	20	20
21	21	21	21	21	21	21	21	21	21	21	21	21	21
22	22	22	22	22	22	22	22	22	22	22	22	22	22
23	23	23	23	23	23	23	23	23	23	23	23	23	23
24	24	24	24	24	24	24	24	24	24	24	24	24	24
25	25	25	25	25	25	25	25	25	25	25	25	25	25
26	26	26	26	26	26	26	26	26	26	26	26	26	26
27	27	27	27	27	27	27	27	27	27	27	27	27	27
28	28	28	28	28	28	28	28	28	28	28	28	28	28
29	29	29	29	29	29	29	29	29	29	29	29	29	29
30	30	30	30	30	30	30	30	30	30	30	30	30	30
31	31	31	31	31	31	31	31	31	31	31	31	31	31
32	32	32	32	32	32	32	32	32	32	32	32	32	32
33	33	33	33	33	33	33	33	33	33	33	33	33	33
34	34	34	34	34	34	34	34	34	34	34	34	34	34
35	35	35	35	35	35	35	35	35	35	35	35	35	35
36	36	36	36	36	36	36	36	36	36	36	36	36	36
37	37	37	37	37	37	37	37	37	37	37	37	37	37
38	38	38	38	38	38	38	38	38	38	38	38	38	38
39	39	39	39	39	39	39	39	39	39	39	39	39	39
40	40	40	40	40	40	40	40	40	40	40	40	40	40
41	41	41	41	41	41	41	41	41	41	41	41	41	41
42	42	42	42	42	42	42	42	42	42	42	42	42	42
43	43	43	43	43	43	43	43	43	43	43	43	43	43
44	44	44	44	44	44	44	44	44	44	44	44	44	44
45	45	45	45	45	45	45	45	45	45	45	45	45	45
46	46	46	46	46	46	46	46	46	46	46	46	46	46
47	47	47	47	47	47	47	47	47	47	47	47	47	47
48	48	48	48	48	48	48	48	48	48	48	48	48	48
49	49	49	49	49	49	49	49	49	49	49	49	49	49
50	50	50	50	50	50	50	50	50	50	50	50	50	50
51	51	51	51	51	51	51	51	51	51	51	51	51	51
52	52	52	52	52	52	52	52	52	52	52	52	52	52
53	53	53	53	53	53	53	53	53	53	53	53	53	53
54	54	54	54	54	54	54	54	54	54	54	54	54	54
55	55	55	55	55	55	55	55	55	55	55	55	55	55
56	56	56	56	56	56	56	56	56	56	56	56	56	56
57	57	57	57	57	57	57	57	57	57	57	57	57	57
58	58	58	58	58	58	58	58	58	58	58	58	58	58
59	59	59	59	59	59	59	59	59	59	59	59	59	59
60	60	60	60	60	60	60	60	60	60	60	60	60	60
61	61	61	61	61	61	61	61	61	61	61	61	61	61
62	62	62	62	62	62	62	62	62	62	62	62	62	62
63	63	63	63	63	63	63	63	63	63	63	63	63	63
64	64	64	64	64	64	64	64	64	64	64	64	64	64
65	65	65	65	65	65	65	65	65	65	65	65	65	65
66	66	66	66	66	66	66	66	66	66	66	66	66	66
67	67	67	67	67	67	67	67	67	67	67	67	67	67
68	68	68	68	68	68	68	68	68	68	68	68	68	68
69	69	69	69	69	69	69	69	69	69	69	69	69	69
70	70	70	70	70	70	70	70	70	70	70	70	70	70
71	71	71	71	71	71	71	71	71	71	71	71	71	71
72	72	72	72	72	72	72	72	72	72	72	72	72	72
73	73	73	73	73	73	73	73	73	73	73	73	73	73
74	74	74	74	74	74	74	74	74	74	74	74	74	74
75	75	75	75	75	75	75	75	75	75	75	75	75	75
76	76	76	76	76	76	76	76	76	76	76	76	76	76
77	77	77	77	77	77	77	77	77	77	77	77	77	77
78	78	78	78	78	78	78	78	78	78	78	78	78	78
79	79	79	79	79	79	79	79	79	79	79	79	79	79
80	80	80	80	80	80	80	80	80	80	80	80	80	80
81	81	81	81	81	81	81	81	81	81	81	81	81	81
82	82	82	82	82	82	82	82	82	82	82	82	82	82
83	83	83	83	83	83	83	83	83	83	83	83	83	83
84	84	84	84	84	84	84	84	84	84	84	84	84	84
85	85	85	85	85	85	85	85	85	85	85	85	85	85
86	86	86	86	86	86	86	86	86	86	86	86	86	86
87	87	87	87	87	87	87	87	87	87	87	87	87	87
88	88	88	88	88	88	88	88	88	88	88	88	88	88
89	89	89	89	89	89	89	89	89	89	89	89	89	89
90	90	90	90	90	90	90	90	90	90	90	90	90	90
91	91	91	91	91	91	91	91	91	91	91	91	91	91
92	92	92	92	92	92	92	92	92	92	92	92	92	92
93	93	93	93	93	93	93	93	93	93	93	93	93	93
94	94	94	94	94	94	94	94	94	94	94	94	94	94
95	95	95	95	95	95	95	95	95	95	95	95	95	95
96	96	96	96	96	96	96	96	96	96	96	96	96	96
97	97	97	97	97	97	97	97	97	97	97	97	97	97
98	98	98	98	98	98	98	98	98	98	98	98	98	98
99	99	99	99	99	99	99	99	99	99	99	99	99	99
100	100	100	100	100	100	100	100	100	100	100	100	100	100

STATION 11 INTEGRATED PERFORMANCE: PRESSURE RATIO = 1.952 ISEN. EFF. = .918 POLY. EFF. = .925 DELTA T ON T = .229



















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[illegible]

## MOTOR PERFORMANCE

[illegible]







AERODYNAMIC RESULTS CASE 2  
TEST POINT 602200201900



PROGRAM J01210 - AIAL CORRELATOR TEST DATA ANALYSIS  
 FIXED DATA PRINTOUT

WTFC CONFIGURATION #1, 100% SP-20, 019 IN-RTLE 1480-BL407 27APR76

NUMBER OF STATIONS 17  
 MAXIMUM NUMBER OF STATIONS 17  
 MAXIMUM NUMBER OF STATIONS 17  
 TOTAL PRESERVED SOURCE LOCATIONS 17  
 TOTAL PRESERVED SOURCE LOCATIONS 17  
 STATION NUMBER FOR SOURCE 17  
 STATION NUMBER FOR SOURCE 17  
 NUMBER OF STATIONS 17  
 MAXIMUM NUMBER OF STATIONS 17  
 MAXIMUM NUMBER OF STATIONS 17

ANALYSIS SPECIFICATION  
 STATION 1 SPECIFIED BY 2 POINTS

RSIN XSTN  
 0.0000 -12.5522  
 0.0000 -12.5522

STATION 2 SPECIFIED BY 2 POINTS

RSIN XSTN  
 0.0000 -12.7062  
 0.0000 -12.7062

STATION 3 SPECIFIED BY 2 POINTS

RSIN XSTN  
 0.0000 -12.6222  
 0.0000 -12.6222

STATION 4 SPECIFIED BY 2 POINTS

RSIN XSTN  
 0.0000 -12.7222  
 0.0000 -12.7222

STATION 5 SPECIFIED BY 2 POINTS

RSIN XSTN  
 0.0000 -12.6222  
 0.0000 -12.6222

STATION 6 SPECIFIED BY 2 POINTS

RSIN XSTN  
 0.0000 -12.6222  
 0.0000 -12.6222

STATION 7 SPECIFIED BY 2 POINTS

RSIN XSTN  
 0.0000 -12.6222  
 0.0000 -12.6222

0.0000 -12.6222  
 0.0000 -12.6222  
 0.0000 -12.6222



## STATION 8 SPECIFIED BY 4 POINTS

RSTN XSTN

3.0363 -7.5550  
 5.0700 -7.0500  
 6.5000 -7.5100  
 8.5000 -7.3750

## STATION 9 SPECIFIED BY 4 POINTS

RSTN XSTN

3.0333 -7.0000  
 5.0333 -7.0450  
 6.5000 -7.0550  
 8.5000 -6.9510

## STATION 10 SPECIFIED BY 4 POINTS

RSTN XSTN

3.7355 -9.5210  
 5.0350 -8.5210  
 6.5000 -8.5200  
 8.5000 -8.5200

## STATION 11 SPECIFIED BY 4 POINTS

RSTN XSTN

4.0444 -5.9010  
 5.0300 -5.9000  
 6.5000 -5.9000  
 8.5000 -5.9000

## STATION 12 SPECIFIED BY 4 POINTS

RSTN XSTN

4.5612 -5.1150  
 5.0300 -5.1150  
 6.5000 -5.1150  
 8.5000 -5.1150

## STATION 13 SPECIFIED BY 4 POINTS

RSTN XSTN

4.5333 -5.1700  
 5.0300 -5.1700  
 6.5000 -5.1700  
 8.5000 -5.1700

## STATION 14 SPECIFIED BY 4 POINTS

RSTN XSTN

4.6335 -2.0250  
 5.0300 -2.0250  
 6.5000 -2.0250  
 8.5000 -2.0250

## STATION 15 SPECIFIED BY 2 POINTS

RSTN XSTN

7.5314 -2.9334  
 8.5000 -2.9334



# STATION 16 SPECIFIED BY 2 POINTS

RSTN XSTN

2.7333 -0.2291  
6.5080 -0.9280

# STATION 17 SPECIFIED BY 2 POINTS

RSTN XSTN

5.7927 0.0933  
8.5900 0.9900

# STATION CALCULATION SPECIFICATION AND BLADING DATA

STATION 2 NCALC = 0 NJATA = -9 NBL = -0  
STATION 3 NCALC = 0 NJATA = -9 NBL = -0  
STATION 4 NCALC = 0 NJATA = -9 NBL = -0  
STATION 5 NCALC = 0 NJATA = -9 NBL = -0  
STATION 6 NCALC = 0 NJATA = -9 NBL = -0  
STATION 7 NCALC = 1 NJATA = 13 NBL = 0

RADIUS	ETA	EPSILON	BLOCKAGE	THETA
2.0757	-37.2742	1.0101	0.4331	24.73
3.0923	-40.2350	-0.0115	0.0209	24.20
4.0147	-42.7014	-0.0473	0.0103	24.01
5.0256	-45.3243	-3.0603	0.1427	24.33
6.0521	-48.3213	-1.0131	0.0970	25.34
7.0832	-51.3222	-0.0491	0.0337	25.40
8.1191	-54.3277	3.0424	0.0335	25.55
9.1635	-57.3347	4.0379	0.0309	25.72
10.2104	-60.3473	5.0339	0.0303	25.88
11.2653	-63.3610	6.0300	0.0306	26.20
12.3283	-66.3753	7.0267	0.0371	26.79

STATION 8 NCALC = 2 NJATA = 13 NBL = 0

RADIUS	ETA	EPSILON	BLOCKAGE	THETA
2.0757	-37.2742	1.0101	0.4331	24.73
3.0923	-40.2350	-0.0115	0.0209	24.20
4.0147	-42.7014	-0.0473	0.0103	24.01
5.0256	-45.3243	-3.0603	0.1427	24.33
6.0521	-48.3213	-1.0131	0.0970	25.34
7.0832	-51.3222	-0.0491	0.0337	25.40
8.1191	-54.3277	3.0424	0.0335	25.55
9.1635	-57.3347	4.0379	0.0309	25.72
10.2104	-60.3473	5.0339	0.0303	25.88
11.2653	-63.3610	6.0300	0.0306	26.20
12.3283	-66.3753	7.0267	0.0371	26.79











OUTLET RADIUS = 0.0001

M-COORD DEVIATION ANGLE (DEGREES)

0.0000  
1.0000

0.0000  
1.0000

NUMBER OF TEST POINTS TO BE ANALYSED = 1

PSCALE= 3.00 PLOWR= 7.00 DAMPE= 5.000 NSAVE= 1

NMAX= 0 MFORCE= 0 NEX= 2



# TEST DATA PRINTOUT FOR POINT NO. 1

TEST POINT TITLE  
 GAS CONSTANT  
 FLOW FRACTION  
 ROTOR SPEED  
 ROTOR TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET (INCHES)  
 ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)  
 RADIUS  
 PRESSURE  
 ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)  
 RADIUS  
 TEMPERATURE  
 STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)  
 RADIUS  
 PEAK PRES  
 STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)  
 RADIUS  
 TEMPERATURE  
 STAGE OUTLET FLOW ANGLES ( 3 POINTS)  
 RADIUS  
 ANGLE

602200201900  
 53.4843  
 62.6222  
 201.6244  
 141.8704  
 1.95590  
 .88469

29.1712  
 29.0913  
 29.0913  
 29.0913  
 29.0913  
 29.0913  
 29.0913  
 29.0913  
 29.0913  
 29.0913

5.1250  
 5.1250  
 5.1250  
 5.1250  
 5.1250  
 5.1250  
 5.1250  
 5.1250  
 5.1250  
 5.1250

29.1712  
 29.0913  
 29.0913  
 29.0913  
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 29.0913  
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 29.0913

5.1250  
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 5.1250  
 5.1250  
 5.1250  
 5.1250  
 5.1250

29.1712  
 29.0913  
 29.0913  
 29.0913  
 29.0913  
 29.0913  
 29.0913  
 29.0913  
 29.0913  
 29.0913



# CASING STATIC PRESSURES (13 POINTS)

X-COORD      PRESSURE

-6.7510  
-8.0010  
-7.7510  
-7.5010  
-7.2510  
-6.7510  
-6.5010  
-6.2510  
-5.7510  
-5.5010  
-5.2510  
-4.7510  
-4.5010

10.1669  
10.6351  
10.8129  
11.1579  
11.2819  
11.4499  
11.4937  
11.9903  
12.4483  
12.3144  
12.3144  
12.3144  
12.3144

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD      PRESSURE

-2.8433  
-2.5030

23.1063  
23.1063

# DISTRIBUTED BLOCKAGE SPECIFICATION

STATION	BLOCKAGE	DIST. FACTOR	MID. DEVIATION	DIST. FACTOR	FRAC. BLOCKAGE
1	0.0000	1.0000	-0.0000	0.0000	-0.0000
2	0.0000	1.0000	-0.0000	-0.0000	-0.0000
3	0.0000	1.0000	-0.0000	-0.0000	-0.0000
4	0.0000	1.0000	-0.0000	-0.0000	-0.0000
5	0.0000	1.0000	-0.0000	-0.0000	-0.0000
6	0.0000	1.0000	-0.0000	-0.0000	-0.0000
7	0.0000	1.0000	-0.0000	-0.0000	-0.0000
8	0.0000	1.0000	-0.0000	-0.0000	-0.0000
9	0.0000	1.0000	-0.0000	-0.0000	-0.0000
10	0.0000	1.0000	-0.0000	-0.0000	-0.0000
11	0.0000	1.0000	-0.0000	-0.0000	-0.0000
12	0.0000	1.0000	-0.0000	-0.0000	-0.0000
13	0.0000	1.0000	-0.0000	-0.0000	-0.0000
14	0.0000	1.0000	-0.0000	-0.0000	-0.0000
15	0.0000	1.0000	-0.0000	-0.0000	-0.0000
16	0.0000	1.0000	-0.0000	-0.0000	-0.0000
17	0.0000	1.0000	-0.0000	-0.0000	-0.0000

# SOLUTION TYPE INDICATORS

STATION    1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16   17

RMACH      0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

NJUMP= 0



PAGE 11 CRAYTON & INCHING, INC. FLOW/SPECIFIED FLOW = .93396 VOLD/VNEW(HUB) = 1.00039 VOLD/VNEW(CASE) = 1.00006

[illegible][illegible]















STATION & FLOW FIELD DESCRIPTION

STREAM LINE	RADIUS IN FEET	VELOCITY IN FT/SEC	TEMPERATURE TOTAL	TEMPERATURE STATIC	PRESSURE STATIC	MACH NO	ANGLE WHEEL SLOPE	RADIUS OF CURVATURE	SPECIFIC WEIGHT
1	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
2	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
3	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
4	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
5	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
6	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
7	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
8	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
9	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
10	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
11	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
12	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
13	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
14	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
15	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
16	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
17	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
18	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
19	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
20	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
21	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
22	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
23	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
24	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
25	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
26	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
27	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
28	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
29	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
30	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
31	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
32	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
33	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
34	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00
35	10.00	100.00	100.00	100.00	100.00	1.00	0.00	10.00	0.00

**BLADE DATA**

[illegible]

STATION & INTEGRATED PERFORMANCE PRESSURE RATIO = 1.227 ISEN. EFF. = .947 POLY. EFF. = .949 DELTA T ON T = .063







卷之四

5195.44  
- 2175

[illegible]

一、二、三、四、五、六、七、八、九、十、十一、十二、十三、十四、十五、十六、十七、十八、十九、二十、二十一、二十二、二十三、二十四、二十五、二十六、二十七、二十八、二十九、三十、三十一、三十二、三十三、三十四、三十五、三十六、三十七、三十八、三十九、四十、四十一、四十二、四十三、四十四、四十五、四十六、四十七、四十八、四十九、五十、五十一、五十二、五十三、五十四、五十五、五十六、五十七、五十八、五十九、六十、六十一、六十二、六十三、六十四、六十五、六十六、六十七、六十八、六十九、七十、七十一、七十二、七十三、七十四、七十五、七十六、七十七、七十八、七十九、八十、八十一、八十二、八十三、八十四、八十五、八十六、八十七、八十八、八十九、九十、九十一、九十二、九十三、九十四、九十五、九十六、九十七、九十八、九十九、一百。

---PRISMATIC---  
TOTAL

CH  
HCH

44-38861-1000

RADIUS OF CURVATURE

CHIC

[illegible]

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1. 1949年10月1日，中华人民共和国成立，标志着中国历史翻开了新的一页。

2. 1954年9月，第一届全国人民代表大会第一次会议在北京召开，通过了《中华人民共和国宪法》。

3. 1956年，中国完成了对农业、手工业和资本主义工商业的社会主义改造，确立了社会主义制度。

4. 1966年5月，文化大革命爆发，给国家和人民带来了深重的灾难。

5. 1978年12月，十一届三中全会召开，作出了改革开放的重大决策，中国进入了社会主义现代化建设的新时期。

6. 1989年6月，六四事件发生，这是中国现代史上一个重要的转折点。

7. 1997年7月1日，香港回归祖国，结束了英国对香港的殖民统治。

8. 1999年12月20日，澳门回归祖国，结束了葡萄牙对澳门的殖民统治。

9. 2001年12月，中国正式加入世界贸易组织（WTO），成为世界贸易大国。

10. 2008年5月12日，汶川大地震发生，举国上下众志成城，抗震救灾。

11. 2012年11月，党的十八大召开，提出了科学发展观和“中国梦”等重要理念。

12. 2013年6月，神舟十号飞船发射成功，中国载人航天事业取得重大进展。

13. 2015年9月，中国首艘航空母舰“辽宁舰”正式交付海军使用。

14. 2016年10月，神舟十一号飞船发射成功，航天员景海鹏和陈冬在太空驻留33天。

15. 2017年10月，党的十九大召开，提出了新时代中国特色社会主义思想。

16. 2018年4月，中国首艘国产大型邮轮“丽波”号交付使用。

17. 2019年10月，中国首艘国产大型邮轮“丽波”号交付使用。

18. 2020年1月，中国首艘国产大型邮轮“丽波”号交付使用。

19. 2021年1月，中国首艘国产大型邮轮“丽波”号交付使用。

20. 2022年1月，中国首艘国产大型邮轮“丽波”号交付使用。

1. 凡在本行开立存款账户的存款人，均可向本行申请开立支票。
 2. 支票的出票人必须是在本行开立存款账户的存款人。
 3. 支票的金额必须与存款账户的余额相符。
 4. 支票的有效期为自签发之日起10日内。
 5. 支票的收款人必须为本行开户的存款人。
 6. 支票的用途必须符合国家有关规定。
 7. 支票的签发必须使用本行规定的支票格式。
 8. 支票的签发必须加盖本行规定的印章。
 9. 支票的签发必须使用本行规定的墨水。
 10. 支票的签发必须使用本行规定的语言。

1. The first part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a stylized, cursive script, and the addresses are listed below them.

2. The second part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a stylized, cursive script, and the addresses are listed below them.

3. The third part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a stylized, cursive script, and the addresses are listed below them.

4. The fourth part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a stylized, cursive script, and the addresses are listed below them.

5. The fifth part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a stylized, cursive script, and the addresses are listed below them.

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9. The ninth part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a stylized, cursive script, and the addresses are listed below them.

10. The tenth part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a stylized, cursive script, and the addresses are listed below them.

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1. 凡在本行开立存款账户的客户，均可向本行申请开立定期存款账户。  
 2. 定期存款账户的开立，须由客户填写《定期存款开户申请书》，并提供有效身份证件。  
 3. 本行定期存款账户分为整存整付、零存整付、整存零付、零存零付四种类型。  
 4. 定期存款的期限分为三个月、六个月、九个月、十二个月、十八个月、二十四个月、三十六个月、四十八个月、六十个月、七十二个月、八十四个月、九十六个月、一百零八个月、一百二十个月。  
 5. 定期存款的利率按中国人民银行规定的利率执行。  
 6. 定期存款账户的开立，须由客户本人或授权代理人办理。  
 7. 定期存款账户的开立，须由客户本人或授权代理人提供有效身份证件。  
 8. 定期存款账户的开立，须由客户本人或授权代理人填写《定期存款开户申请书》。  
 9. 定期存款账户的开立，须由客户本人或授权代理人提供有效身份证件。  
 10. 定期存款账户的开立，须由客户本人或授权代理人填写《定期存款开户申请书》。

[illegible]A black and white photograph of a document page. The page contains a grid of small, illegible characters or symbols, possibly a code or a list. The characters are arranged in rows and columns, but they are too small and blurry to be read. The overall appearance is that of a technical or scientific document.

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## STATION 12 FLOW FIELD DESCRIPTION

| STREAM<br>LINE | RADIUS | MERID<br>ANGLE | VELOCITY<br>INCHES | TOTAL<br>VELOCITY | TEMPERATURE<br>TOTAL | STATIC<br>PRESSURE | RELATIVE<br>VELOCITY | RELATIVE<br>MACH NO | SPEED | COEFF | INCLINATION | RELATIVE<br>ANGLE | LOCAT<br>SECTION |
|----------------|--------|----------------|--------------------|-------------------|----------------------|--------------------|----------------------|---------------------|-------|-------|-------------|-------------------|------------------|
| 1              | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 1                |
| 2              | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 2                |
| 3              | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 3                |
| 4              | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 4                |
| 5              | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 5                |
| 6              | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 6                |
| 7              | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 7                |
| 8              | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 8                |
| 9              | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 9                |
| 10             | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 10               |
| 11             | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 11               |
| 12             | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 12               |
| 13             | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 13               |
| 14             | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 14               |
| 15             | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 15               |
| 16             | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 16               |
| 17             | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 17               |
| 18             | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 18               |
| 19             | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 19               |
| 20             | 12     | 15             | 3540               | 3540              | 31.1                 | 31.1               | 31.1                 | 31.1                | 31.1  | 31.1  | 31.1        | 31.1              | 20               |

## BLADE DATA

| LOCAT<br>SECTION | SLAB<br>SECTION | CHORD<br>LENGTH | RELATIVE<br>ANGLE | RELATIVE<br>VELOCITY | RELATIVE<br>MACH NO | SPEED | COEFF | INCLINATION | RELATIVE<br>ANGLE | LOCAT<br>SECTION |
|------------------|-----------------|-----------------|-------------------|----------------------|---------------------|-------|-------|-------------|-------------------|------------------|
| 1                | 1               | 1               | 1                 | 1                    | 1                   | 1     | 1     | 1           | 1                 | 1                |
| 2                | 2               | 2               | 2                 | 2                    | 2                   | 2     | 2     | 2           | 2                 | 2                |
| 3                | 3               | 3               | 3                 | 3                    | 3                   | 3     | 3     | 3           | 3                 | 3                |
| 4                | 4               | 4               | 4                 | 4                    | 4                   | 4     | 4     | 4           | 4                 | 4                |
| 5                | 5               | 5               | 5                 | 5                    | 5                   | 5     | 5     | 5           | 5                 | 5                |
| 6                | 6               | 6               | 6                 | 6                    | 6                   | 6     | 6     | 6           | 6                 | 6                |
| 7                | 7               | 7               | 7                 | 7                    | 7                   | 7     | 7     | 7           | 7                 | 7                |
| 8                | 8               | 8               | 8                 | 8                    | 8                   | 8     | 8     | 8           | 8                 | 8                |
| 9                | 9               | 9               | 9                 | 9                    | 9                   | 9     | 9     | 9           | 9                 | 9                |
| 10               | 10              | 10              | 10                | 10                   | 10                  | 10    | 10    | 10          | 10                | 10               |
| 11               | 11              | 11              | 11                | 11                   | 11                  | 11    | 11    | 11          | 11                | 11               |
| 12               | 12              | 12              | 12                | 12                   | 12                  | 12    | 12    | 12          | 12                | 12               |
| 13               | 13              | 13              | 13                | 13                   | 13                  | 13    | 13    | 13          | 13                | 13               |
| 14               | 14              | 14              | 14                | 14                   | 14                  | 14    | 14    | 14          | 14                | 14               |
| 15               | 15              | 15              | 15                | 15                   | 15                  | 15    | 15    | 15          | 15                | 15               |
| 16               | 16              | 16              | 16                | 16                   | 16                  | 16    | 16    | 16          | 16                | 16               |
| 17               | 17              | 17              | 17                | 17                   | 17                  | 17    | 17    | 17          | 17                | 17               |
| 18               | 18              | 18              | 18                | 18                   | 18                  | 18    | 18    | 18          | 18                | 18               |
| 19               | 19              | 19              | 19                | 19                   | 19                  | 19    | 19    | 19          | 19                | 19               |
| 20               | 20              | 20              | 20                | 20                   | 20                  | 20    | 20    | 20          | 20                | 20               |

| LOCAT<br>SECTION | SLAB<br>SECTION | CHORD<br>LENGTH | RELATIVE<br>ANGLE | RELATIVE<br>VELOCITY | RELATIVE<br>MACH NO | SPEED | COEFF | INCLINATION | RELATIVE<br>ANGLE | LOCAT<br>SECTION |
|------------------|-----------------|-----------------|-------------------|----------------------|---------------------|-------|-------|-------------|-------------------|------------------|
| 1                | 1               | 1               | 1                 | 1                    | 1                   | 1     | 1     | 1           | 1                 | 1                |
| 2                | 2               | 2               | 2                 | 2                    | 2                   | 2     | 2     | 2           | 2                 | 2                |
| 3                | 3               | 3               | 3                 | 3                    | 3                   | 3     | 3     | 3           | 3                 | 3                |
| 4                | 4               | 4               | 4                 | 4                    | 4                   | 4     | 4     | 4           | 4                 | 4                |
| 5                | 5               | 5               | 5                 | 5                    | 5                   | 5     | 5     | 5           | 5                 | 5                |
| 6                | 6               | 6               | 6                 | 6                    | 6                   | 6     | 6     | 6           | 6                 | 6                |
| 7                | 7               | 7               | 7                 | 7                    | 7                   | 7     | 7     | 7           | 7                 | 7                |
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| 9                | 9               | 9               | 9                 | 9                    | 9                   | 9     | 9     | 9           | 9                 | 9                |
| 10               | 10              | 10              | 10                | 10                   | 10                  | 10    | 10    | 10          | 10                | 10               |
| 11               | 11              | 11              | 11                | 11                   | 11                  | 11    | 11    | 11          | 11                | 11               |
| 12               | 12              | 12              | 12                | 12                   | 12                  | 12    | 12    | 12          | 12                | 12               |
| 13               | 13              | 13              | 13                | 13                   | 13                  | 13    | 13    | 13          | 13                | 13               |
| 14               | 14              | 14              | 14                | 14                   | 14                  | 14    | 14    | 14          | 14                | 14               |
| 15               | 15              | 15              | 15                | 15                   | 15                  | 15    | 15    | 15          | 15                | 15               |
| 16               | 16              | 16              | 16                | 16                   | 16                  | 16    | 16    | 16          | 16                | 16               |
| 17               | 17              | 17              | 17                | 17                   | 17                  | 17    | 17    | 17          | 17                | 17               |
| 18               | 18              | 18              | 18                | 18                   | 18                  | 18    | 18    | 18          | 18                | 18               |
| 19               | 19              | 19              | 19                | 19                   | 19                  | 19    | 19    | 19          | 19                | 19               |
| 20               | 20              | 20              | 20                | 20                   | 20                  | 20    | 20    | 20          | 20                | 20               |

STATION 12 INTEGRATED PERFORMANCE PRESSURE RATIO = 2.131 ISENTROPIC EFF. = .925 POLY. EFF. = .933 DELTA T ON I = .260



[illegible][illegible]







[illegible]

STATION 15 INTEGRATED PERFORMANCE PRESSURE RATIO = 2.033 ISEN. EFF. = .882 POLY. EFF. = .894 OLLTATION T = .260

[illegible]



| STATION | 17 | FLOW | FIELD | DESCRIPTION |
|---------|----|------|-------|-------------|
| 1       |    |      |       |             |
| 2       |    |      |       |             |
| 3       |    |      |       |             |
| 4       |    |      |       |             |
| 5       |    |      |       |             |
| 6       |    |      |       |             |
| 7       |    |      |       |             |
| 8       |    |      |       |             |
| 9       |    |      |       |             |
| 10      |    |      |       |             |
| 11      |    |      |       |             |
| 12      |    |      |       |             |
| 13      |    |      |       |             |
| 14      |    |      |       |             |
| 15      |    |      |       |             |
| 16      |    |      |       |             |
| 17      |    |      |       |             |
| 18      |    |      |       |             |
| 19      |    |      |       |             |
| 20      |    |      |       |             |
| 21      |    |      |       |             |
| 22      |    |      |       |             |
| 23      |    |      |       |             |
| 24      |    |      |       |             |
| 25      |    |      |       |             |
| 26      |    |      |       |             |
| 27      |    |      |       |             |
| 28      |    |      |       |             |
| 29      |    |      |       |             |
| 30      |    |      |       |             |
| 31      |    |      |       |             |
| 32      |    |      |       |             |
| 33      |    |      |       |             |
| 34      |    |      |       |             |
| 35      |    |      |       |             |
| 36      |    |      |       |             |
| 37      |    |      |       |             |
| 38      |    |      |       |             |
| 39      |    |      |       |             |
| 40      |    |      |       |             |
| 41      |    |      |       |             |
| 42      |    |      |       |             |
| 43      |    |      |       |             |
| 44      |    |      |       |             |
| 45      |    |      |       |             |
| 46      |    |      |       |             |
| 47      |    |      |       |             |
| 48      |    |      |       |             |
| 49      |    |      |       |             |
| 50      |    |      |       |             |
| 51      |    |      |       |             |
| 52      |    |      |       |             |
| 53      |    |      |       |             |
| 54      |    |      |       |             |
| 55      |    |      |       |             |
| 56      |    |      |       |             |
| 57      |    |      |       |             |
| 58      |    |      |       |             |
| 59      |    |      |       |             |
| 60      |    |      |       |             |
| 61      |    |      |       |             |
| 62      |    |      |       |             |
| 63      |    |      |       |             |
| 64      |    |      |       |             |
| 65      |    |      |       |             |
| 66      |    |      |       |             |
| 67      |    |      |       |             |
| 68      |    |      |       |             |
| 69      |    |      |       |             |
| 70      |    |      |       |             |
| 71      |    |      |       |             |
| 72      |    |      |       |             |
| 73      |    |      |       |             |
| 74      |    |      |       |             |
| 75      |    |      |       |             |
| 76      |    |      |       |             |
| 77      |    |      |       |             |
| 78      |    |      |       |             |
| 79      |    |      |       |             |
| 80      |    |      |       |             |
| 81      |    |      |       |             |
| 82      |    |      |       |             |
| 83      |    |      |       |             |
| 84      |    |      |       |             |
| 85      |    |      |       |             |
| 86      |    |      |       |             |
| 87      |    |      |       |             |
| 88      |    |      |       |             |
| 89      |    |      |       |             |
| 90      |    |      |       |             |
| 91      |    |      |       |             |
| 92      |    |      |       |             |
| 93      |    |      |       |             |
| 94      |    |      |       |             |
| 95      |    |      |       |             |
| 96      |    |      |       |             |
| 97      |    |      |       |             |
| 98      |    |      |       |             |
| 99      |    |      |       |             |
| 100     |    |      |       |             |

[illegible]

## ROTOR PERFORMANCE

[illegible]



[illegible]

```

173
STATION 0.0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
MID POINT 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
ELEVATION 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
INT BLOCKAGE 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
SUMMARY POINT NO. 1 THE CALCULATION IS CONVERGED PASS 51
TEST POINT TITLE = 602200281900
FLOW = 62.6+ SPEED = 20152.4 PRESSURE RATIO = 2.0E5 ISENTROPIC EFFY = .6923 POLYTROPIC EFFY = .6935 DEL T/T = .2603

```



## APPENDIX B

### TEST DATA, INPUT DATA FOR PHASE II DATA REDUCTION (ACROSS BLADE)

This Appendix lists the input data and test data in the form of computer listing for each data point on all speedlines. The input data or fixed data is given at the beginning of each speedline and applies to all points on that speedline. The test data for each data point includes the output deck from the Phase I analysis.



40% SPEEDLINE PHASE II INPUT DATA



HTFC CONFIGURATION #1; 40% SPEED, ACROSS-BLADE ANALYSIS; 26MAR76

PER PAGE

[illegible]

STATION 1 SPECIFIED BY 2 POINTS

**MSH**      **MSH**

● 中国书画函授大学肇庆分校 ●  
● 肇庆分校建校二十周年纪念册 ●

STATION 2 SPECIFIED BY 2 POINTS

**H15x**

**M15x**

一、二、三、四、五、六、七、八、九、十、十一、十二、十三、十四、十五、十六、十七、十八、十九、二十、二十一、二十二、二十三、二十四、二十五、二十六、二十七、二十八、二十九、三十、三十一、三十二、三十三、三十四、三十五、三十六、三十七、三十八、三十九、四十、四十一、四十二、四十三、四十四、四十五、四十六、四十七、四十八、四十九、五十、五十一、五十二、五十三、五十四、五十五、五十六、五十七、五十八、五十九、六十、六十一、六十二、六十三、六十四、六十五、六十六、六十七、六十八、六十九、七十、七十一、七十二、七十三、七十四、七十五、七十六、七十七、七十八、七十九、八十、八十一、八十二、八十三、八十四、八十五、八十六、八十七、八十八、八十九、九十、九十一、九十二、九十三、九十四、九十五、九十六、九十七、九十八、九十九、一百。

NOTATION 1 SPECIFIED BY 2 POINTS

REST XSTN

— 10.6503 —

# NOTATION & SPECIES 2 POINTS

151

1. 543 港  
-9.7529  
-31.4180

STATION 5 SPECIFIED BY 2 POINTS

157 158

777  
444  
333  
222  
111

STATION 6 SPECIFIED BY 2 POINTS

**MISX**

[illegible]

STATION 7 SPECIFIED BY 6 POINTS

Q51M  
Q51M

3159.03  
-8.603-

1990年12月



# STATION 8 SPECIFIED BY 9 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.4612 | -5.3150 |
| 4.6000 | -5.1000 |
| 4.8000 | -5.0000 |
| 5.0000 | -4.8000 |
| 5.1000 | -4.6000 |
| 5.2000 | -4.4000 |
| 5.3000 | -4.2000 |
| 5.4000 | -4.0000 |
| 5.5000 | -3.8000 |
| 5.6000 | -3.6000 |
| 5.7000 | -3.4000 |
| 5.8000 | -3.2000 |
| 5.9000 | -3.0000 |
| 6.0000 | -2.8000 |

# STATION 9 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.5516 | -5.1700 |
| 4.7000 | -5.0000 |
| 4.8500 | -4.8000 |
| 5.0000 | -4.6000 |

# STATION 10 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.6415 | -5.0250 |
| 4.7500 | -4.7500 |
| 4.8500 | -4.4500 |
| 5.0000 | -4.0000 |

# STATION 11 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.6314 | -2.4948 |
| 6.5000 | -2.2174 |

# STATION 12 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.7306 | -2.9200 |
| 6.5000 | -2.9200 |

# STATION 13 SPECIFIED BY 2 POINTS

| RSTN   | XSTN   |
|--------|--------|
| 5.7306 | 0.0000 |
| 6.5000 | 0.0000 |

# STATION CALCULATION SPECIFICATION AND BLADING DATA

|           |           |            |          |
|-----------|-----------|------------|----------|
| STATION 2 | NCALC = 0 | NDATA = -3 | NBL = -3 |
| STATION 3 | NCALC = 0 | NDATA = -3 | NBL = -3 |
| STATION 4 | NCALC = 0 | NDATA = -3 | NBL = -3 |
| STATION 5 | NCALC = 0 | NDATA = -3 | NBL = -3 |
| STATION 6 | NCALC = 0 | NDATA = -3 | NBL = -3 |







[illegible]

0.0000  
1.0000

OUTLET RADIUS = 0.0003

| H-COORD | DEVIATION ANGLE (DEGREES) |
|---------|---------------------------|
| 1       | 10                        |
| 2       | 15                        |
| 3       | 20                        |
| 4       | 25                        |
| 5       | 30                        |
| 6       | 35                        |
| 7       | 40                        |
| 8       | 45                        |
| 9       | 50                        |
| 10      | 55                        |
| 11      | 60                        |
| 12      | 65                        |
| 13      | 70                        |
| 14      | 75                        |
| 15      | 80                        |
| 16      | 85                        |
| 17      | 90                        |
| 18      | 95                        |
| 19      | 100                       |
| 20      | 105                       |
| 21      | 110                       |
| 22      | 115                       |
| 23      | 120                       |
| 24      | 125                       |
| 25      | 130                       |
| 26      | 135                       |
| 27      | 140                       |
| 28      | 145                       |
| 29      | 150                       |
| 30      | 155                       |
| 31      | 160                       |
| 32      | 165                       |
| 33      | 170                       |
| 34      | 175                       |
| 35      | 180                       |
| 36      | 185                       |
| 37      | 190                       |
| 38      | 195                       |
| 39      | 200                       |
| 40      | 205                       |
| 41      | 210                       |
| 42      | 215                       |
| 43      | 220                       |
| 44      | 225                       |
| 45      | 230                       |
| 46      | 235                       |
| 47      | 240                       |
| 48      | 245                       |
| 49      | 250                       |
| 50      | 255                       |
| 51      | 260                       |
| 52      | 265                       |
| 53      | 270                       |
| 54      | 275                       |
| 55      | 280                       |
| 56      | 285                       |
| 57      | 290                       |
| 58      | 295                       |
| 59      | 300                       |
| 60      | 305                       |
| 61      | 310                       |
| 62      | 315                       |
| 63      | 320                       |
| 64      | 325                       |
| 65      | 330                       |
| 66      | 335                       |
| 67      | 340                       |
| 68      | 345                       |
| 69      | 350                       |
| 70      | 355                       |
| 71      | 360                       |
| 72      | 365                       |
| 73      | 370                       |
| 74      | 375                       |
| 75      | 380                       |
| 76      | 385                       |
| 77      | 390                       |
| 78      | 395                       |
| 79      | 400                       |
| 80      | 405                       |
| 81      | 410                       |
| 82      | 415                       |
| 83      | 420                       |
| 84      | 425                       |
| 85      | 430                       |
| 86      | 435                       |
| 87      | 440                       |
| 88      | 445                       |
| 89      | 450                       |
| 90      | 455                       |
| 91      | 460                       |
| 92      | 465                       |
| 93      | 470                       |
| 94      | 475                       |
| 95      | 480                       |
| 96      | 485                       |
| 97      | 490                       |
| 98      | 495                       |
| 99      | 500                       |
| 100     | 505                       |
| 101     | 510                       |
| 102     | 515                       |
| 103     | 520                       |
| 104     | 525                       |
| 105     | 530                       |
| 106     | 535                       |
| 107     | 540                       |
| 108     | 545                       |
| 109     | 550                       |
| 110     | 555                       |
| 111     | 560                       |
| 112     | 565                       |
| 113     | 570                       |
| 114     | 575                       |
| 115     | 580                       |
| 116     | 585                       |
| 117     | 590                       |
| 118     | 595                       |
| 119     | 600                       |
| 120     | 605                       |
| 121     | 610                       |
| 122     | 615                       |
| 123     | 620                       |
| 124     | 625                       |
| 125     | 630                       |
| 126     | 635                       |
| 127     | 640                       |
| 128     | 645                       |
| 129     | 650                       |
| 130     | 655                       |
| 131     | 660                       |
| 132     | 665                       |
| 133     | 670                       |
| 134     | 675                       |
| 135     | 680                       |
| 136     | 685                       |
| 137     | 690                       |
| 138     | 695                       |
| 139     | 700                       |
| 140     | 705                       |
| 141     | 710                       |
| 142     | 715                       |
| 143     | 720                       |
| 144     | 725                       |
| 145     | 730                       |
| 146     | 735                       |
| 147     | 740                       |
| 148     | 745                       |
| 149     | 750                       |
| 150     | 755                       |
| 151     | 760                       |
| 152     | 765                       |
| 153     | 770                       |
| 154     | 775                       |
| 155     | 780                       |
| 156     | 785                       |
| 157     | 790                       |
| 158     | 795                       |
| 159     | 800                       |
| 160     | 805                       |
| 161     | 810                       |
| 162     | 815                       |
| 163     | 820                       |
| 164     | 825                       |
| 165     | 830                       |
| 166     | 835                       |
| 167     | 840                       |

0-0000  
1-0000

| H-COORD | LOSS COEFF/TOTAL | LOSS COEFF |
|---------|------------------|------------|
| 1       | 0.000000         | 0.000000   |
| 2       | 0.000000         | 0.000000   |
| 3       | 0.000000         | 0.000000   |
| 4       | 0.000000         | 0.000000   |
| 5       | 0.000000         | 0.000000   |
| 6       | 0.000000         | 0.000000   |
| 7       | 0.000000         | 0.000000   |
| 8       | 0.000000         | 0.000000   |
| 9       | 0.000000         | 0.000000   |
| 10      | 0.000000         | 0.000000   |
| 11      | 0.000000         | 0.000000   |
| 12      | 0.000000         | 0.000000   |
| 13      | 0.000000         | 0.000000   |
| 14      | 0.000000         | 0.000000   |
| 15      | 0.000000         | 0.000000   |
| 16      | 0.000000         | 0.000000   |
| 17      | 0.000000         | 0.000000   |
| 18      | 0.000000         | 0.000000   |
| 19      | 0.000000         | 0.000000   |
| 20      | 0.000000         | 0.000000   |
| 21      | 0.000000         | 0.000000   |
| 22      | 0.000000         | 0.000000   |
| 23      | 0.000000         | 0.000000   |
| 24      | 0.000000         | 0.000000   |
| 25      | 0.000000         | 0.000000   |
| 26      | 0.000000         | 0.000000   |
| 27      | 0.000000         | 0.000000   |
| 28      | 0.000000         | 0.000000   |
| 29      | 0.000000         | 0.000000   |
| 30      | 0.000000         | 0.000000   |
| 31      | 0.000000         | 0.000000   |
| 32      | 0.000000         | 0.000000   |
| 33      | 0.000000         | 0.000000   |
| 34      | 0.000000         | 0.000000   |
| 35      | 0.000000         | 0.000000   |
| 36      | 0.000000         | 0.000000   |
| 37      | 0.000000         | 0.000000   |
| 38      | 0.000000         | 0.000000   |
| 39      | 0.000000         | 0.000000   |
| 40      | 0.000000         | 0.000000   |
| 41      | 0.000000         | 0.000000   |
| 42      | 0.000000         | 0.000000   |
| 43      | 0.000000         | 0.000000   |
| 44      | 0.000000         | 0.000000   |
| 45      | 0.000000         | 0.000000   |
| 46      | 0.000000         | 0.000000   |
| 47      | 0.000000         | 0.000000   |
| 48      | 0.000000         | 0.000000   |
| 49      | 0.000000         | 0.000000   |
| 50      | 0.000000         | 0.000000   |
| 51      | 0.000000         | 0.000000   |
| 52      | 0.000000         | 0.000000   |
| 53      | 0.000000         | 0.000000   |
| 54      | 0.000000         | 0.000000   |
| 55      | 0.000000         | 0.000000   |
| 56      | 0.000000         | 0.000000   |
| 57      | 0.000000         | 0.000000   |
| 58      | 0.000000         | 0.000000   |
| 59      | 0.000000         | 0.000000   |
| 60      | 0.000000         | 0.000000   |
| 61      | 0.000000         | 0.000000   |
| 62      | 0.000000         | 0.000000   |
| 63      | 0.000000         | 0.000000   |
| 64      | 0.000000         | 0.000000   |
| 65      | 0.000000         | 0.000000   |
| 66      | 0.000000         | 0.000000   |
| 67      | 0.000000         | 0.000000   |
| 68      | 0.000000         | 0.000000   |
| 69      | 0.000000         | 0.000000   |
| 70      | 0.000000         | 0.000000   |
| 71      | 0.000000         | 0.000000   |
| 72      | 0.000000         | 0.000000   |
| 73      | 0.000000         | 0.000000   |
| 74      | 0.000000         | 0.000000   |
| 75      | 0.000000         | 0.000000   |
| 76      | 0.000000         | 0.000000   |
| 77      | 0.000000         | 0.000000   |
| 78      | 0.000000         | 0.000000   |
| 79      | 0.000000         | 0.000000   |
| 80      | 0.000000         | 0.000000   |
| 81      | 0.000000         | 0.000000   |
| 82      | 0.000000         | 0.000000   |
| 83      | 0.000000         | 0.000000   |
| 84      | 0.000000         | 0.000000   |
| 85      | 0.000000         | 0.000000   |
| 86      | 0.000000         | 0.000000   |
| 87      | 0.000000         | 0.000000   |
| 88      | 0.000000         | 0.000000   |
| 89      | 0.000000         | 0.000000   |
| 90      | 0.000000         | 0.000000   |
| 91      | 0.000000         | 0.000000   |
| 92      | 0.000000         | 0.000000   |
| 93      | 0.000000         | 0.000000   |
| 94      | 0.000000         | 0.000000   |
| 95      |                  |            |

01:0000 01:0000

OUTLET RADIUS = 0.0000

| M-COORD | DEVIATION ANGLE (DEGREES) |
|---------|---------------------------|
| 1       | 10                        |
| 2       | 20                        |
| 3       | 30                        |
| 4       | 40                        |
| 5       | 50                        |
| 6       | 60                        |
| 7       | 70                        |
| 8       | 80                        |
| 9       | 90                        |
| 10      | 100                       |
| 11      | 110                       |
| 12      | 120                       |
| 13      | 130                       |
| 14      | 140                       |
| 15      | 150                       |
| 16      | 160                       |
| 17      | 170                       |
| 18      | 180                       |
| 19      | 190                       |
| 20      | 200                       |
| 21      | 210                       |
| 22      | 220                       |
| 23      | 230                       |
| 24      | 240                       |
| 25      | 250                       |
| 26      | 260                       |
| 27      | 270                       |
| 28      | 280                       |
| 29      | 290                       |
| 30      | 300                       |
| 31      | 310                       |
| 32      | 320                       |
| 33      | 330                       |
| 34      | 340                       |
| 35      | 350                       |
| 36      | 360                       |

[illegible]

NUMBER OF TEST POINTS TO BE ANALYSED = 7

PSCALE= 0.00 PLOWEQ= 0.00 OAPPE= 7.030 NSAVE= 1

$2 = X \cap Y = X \cap Z = X$



[illegible]

Test Point Title

1. TEMPERATURE  
 2. RELATIVE HUMIDITY  
 3. WIND DIRECTION  
 4. WIND VELOCITY  
 5. PRECIPITATION  
 6. ATMOSPHERIC PRESSURE  
 7. SOIL TEMPERATURE  
 8. SOIL MOISTURE  
 9. PLANT GROWTH  
 10. PLANT DISEASE  
 11. PLANT INJURY  
 12. PLANT YIELD  
 13. PLANT QUALITY  
 14. PLANT HEALTH  
 15. PLANT VIGOR  
 16. PLANT COLOR  
 17. PLANT SIZE  
 18. PLANT WEIGHT  
 19. PLANT LENGTH  
 20. PLANT WIDTH  
 21. PLANT HEIGHT  
 22. PLANT DENSITY  
 23. PLANT SPACING  
 24. PLANT PLANTING  
 25. PLANT HARVESTING  
 26. PLANT STORAGE  
 27. PLANT DISTRIBUTION  
 28. PLANT PRODUCTION  
 29. PLANT MANAGEMENT  
 30. PLANT MAINTENANCE  
 31. PLANT PROTECTION  
 32. PLANT PESTS  
 33. PLANT DISEASES  
 34. PLANT INJURIES  
 35. PLANT YIELDS  
 36. PLANT QUALITIES  
 37. PLANT HEALTHS  
 38. PLANT VIGORS  
 39. PLANT COLORS  
 40. PLANT SIZES  
 41. PLANT WEIGHTS  
 42. PLANT LENGTHS  
 43. PLANT WIDTHS  
 44. PLANT HEIGHTS  
 45. PLANT DENSITIES  
 46. PLANT SPACINGS  
 47. PLANT PLANTINGS  
 48. PLANT HARVESTINGS  
 49. PLANT STORAGES  
 50. PLANT DISTRIBUTIONS  
 51. PLANT PRODUCTIONS  
 52. PLANT MANagements  
 53. PLANT MAINTENANCES  
 54. PLANT PROTECTIONS  
 55. PLANT PESTS  
 56. PLANT DISEASES  
 57. PLANT INJURIES  
 58. PLANT YIELDS  
 59. PLANT QUALITIES  
 60. PLANT HEALTHS  
 61. PLANT VIGORS  
 62. PLANT COLORS  
 63. PLANT SIZES  
 64. PLANT WEIGHTS  
 65. PLANT LENGTHS  
 66. PLANT WIDTHS  
 67. PLANT HEIGHTS  
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 92. PLANT SPACINGS  
 93. PLANT PLANTINGS  
 94. PLANT HARVESTINGS  
 95. PLANT STORAGES  
 96. PLANT DISTRIBUTIONS  
 97. PLANT PRODUCTIONS  
 98. PLANT MANagements  
 99. PLANT MAINTENANCES  
 100. PLANT PROTECTIONS

ENTER OUTPUT TOTAL PAGE 3 PAGE 4

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50109

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TEMPERATURE

RADIUS

STAGE OUTPUT TOTAL PRESSURE 1 60349751544700

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|       |        |
|-------|--------|
| 37509 | 501072 |
| 72419 | 69999  |
| 64911 | 80744  |
| 54811 | 82294  |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 14.3099  |
| -6.0010 | 14.3722  |
| -7.7510 | 14.4570  |
| -7.5010 | 14.6193  |
| -7.2510 | 14.9330  |
| -7.0010 | 15.1425  |
| -6.5010 | 15.3221  |
| -6.2510 | 15.4062  |
| -6.0010 | 15.4487  |
| -5.7510 | 15.5511  |
| -5.5010 | 15.6191  |
| -5.2510 | 15.6744  |
| -5.0010 | 15.7191  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 15.3486  |
| -2.5088 | 15.3485  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. ICE BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |
| 2       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |
| 3       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |
| 4       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |
| 5       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |
| 6       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |
| 7       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |
| 8       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |
| 9       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |
| 10      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |
| 11      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |
| 12      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |
| 13      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000             |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 2

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/IN(SID)  
 P IN/P IN(SID)

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 2.1250 | 16.5540  |
| 3.1250 | 16.4306  |
| 4.1250 | 16.3022  |
| 5.1250 | 16.1687  |
| 6.1250 | 16.0303  |
| 7.1250 | 15.8870  |
| 8.1250 | 15.7388  |
| 9.1250 | 15.5857  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 2.1250 | 535.618     |
| 3.1250 | 536.375     |
| 4.1250 | 537.142     |
| 5.1250 | 537.909     |
| 6.1250 | 538.676     |
| 7.1250 | 539.443     |
| 8.1250 | 540.210     |
| 9.1250 | 540.977     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS  | MEAN PRES | PEAK PRES |
|---------|-----------|-----------|
| 6.1250  | 16.4977   | 16.5902   |
| 7.1250  | 16.3527   | 16.4452   |
| 8.1250  | 16.2077   | 16.3002   |
| 9.1250  | 16.0627   | 16.1552   |
| 10.1250 | 15.9177   | 16.0102   |
| 11.1250 | 15.7727   | 15.8652   |
| 12.1250 | 15.6277   | 15.7202   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 6.1250  | 536.703     |
| 7.1250  | 537.464     |
| 8.1250  | 538.225     |
| 9.1250  | 538.986     |
| 10.1250 | 539.747     |
| 11.1250 | 540.508     |
| 12.1250 | 541.269     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0220 | 7.120 |
| 7.1440 | 7.022 |
| 6.4460 | 6.336 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 14.3363  
 -8.0010 14.4044  
 -7.7310 14.4802  
 -7.5010 14.5364  
 -7.2510 14.5974  
 -7.0010 15.1849  
 -6.7510 15.3112  
 -6.5010 15.3687  
 -6.2510 15.4583  
 -6.0010 15.4863  
 -5.7510 15.6005  
 -5.5010 15.4955  
 -2.5190

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499 15.4301  
 -.5080

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0







# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 14.3584  
 -8.0010 14.4273  
 -7.7510 14.4915  
 -7.5010 14.5534  
 -7.2510 14.6205  
 -7.0010 14.6851  
 -6.7510 14.7434  
 -6.5010 14.8037  
 -6.2510 14.8603  
 -6.0010 14.9150  
 -5.7510 14.9629  
 -5.5010 15.0124  
 -5.2510 15.0624  
 -5.0010 15.1130

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8+93 15.4754  
 -.5000 15.4754

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. T. BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NYACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 4

TEST POINT TITLE  
 GAS CONSTANT  
 AIR FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN(30)  
 P IN/P IN(30)

510290-33040  
 53.8233  
 20.7297  
 8085.6  
 14.6944  
 518.708  
 .98334  
 .98254

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |
| 5.1250 | 16.5663     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1250 | 16.5663   | 16.5663   |
| 6.1250 | 16.5663   | 16.5663   |
| 6.1250 | 16.5663   | 16.5663   |
| 6.1250 | 16.5663   | 16.5663   |
| 6.1250 | 16.5663   | 16.5663   |
| 6.1250 | 16.5663   | 16.5663   |
| 6.1250 | 16.5663   | 16.5663   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1250 | 16.5663     |
| 6.1250 | 16.5663     |
| 6.1250 | 16.5663     |
| 6.1250 | 16.5663     |
| 6.1250 | 16.5663     |
| 6.1250 | 16.5663     |
| 6.1250 | 16.5663     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0238 | 1.580 |
| 7.1438 | 1.580 |
| 6.4350 | 1.580 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510  
 -8.0010  
 -7.7510  
 -7.5010  
 -7.2510  
 -7.0010  
 -6.7510  
 -6.5010  
 -6.2510  
 -6.0010  
 -5.7510  
 -5.5010  
 -5.2510

# HUB STATIC PRESSURES ( 2 POINTS

X-COORD PRESSURE

-2.8499  
 -5.080

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 5

## TEST POINT TITLE

GAS CONSTANT  
FLOW RATE FRACTION  
FLOW RATE  
OUTLET TOTAL PRESSURE  
INLET TOTAL PRESSURE  
INLET TEMPERATURE  
INLET HUMIDITY

\* 510290504040  
\* 51.5226  
\* 20.1049  
\* 14.0738  
\* 51.5226  
\* .90561

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 16.5593  |
| 5.1500 | 16.5576  |
| 5.1750 | 16.5524  |
| 5.2000 | 16.5465  |
| 5.2250 | 16.5411  |
| 5.2500 | 16.5331  |
| 7.1250 | 16.5446  |
| 7.1500 | 16.5792  |
| 8.1250 | 16.4973  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 15.786      |
| 5.1500 | 15.785      |
| 5.1750 | 15.785      |
| 5.2000 | 15.785      |
| 5.2250 | 15.785      |
| 5.2500 | 15.785      |
| 7.1250 | 15.785      |
| 7.1500 | 15.785      |
| 8.1250 | 15.785      |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 16.5175   | 16.6107   |
| 6.1490 | 16.5175   | 16.6107   |
| 6.1710 | 16.5175   | 16.6107   |
| 7.1270 | 16.5175   | 16.6107   |
| 7.1490 | 16.5175   | 16.6107   |
| 7.1710 | 16.5175   | 16.6107   |
| 8.1610 | 16.5175   | 16.6107   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 16.5175     |
| 6.1490 | 16.5175     |
| 6.1710 | 16.5175     |
| 7.1270 | 16.5175     |
| 7.1490 | 16.5175     |
| 7.1710 | 16.5175     |
| 8.1610 | 16.5175     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0220 | 1.568 |
| 7.1440 | 1.568 |
| 6.1560 | 4.721 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-6.7510  
 -6.0010  
 -7.7510  
 -7.5010  
 -7.2510  
 -7.0010  
 -6.7510  
 -6.5010  
 -6.2510  
 -6.0010  
 -5.7510  
 -5.5010  
 -5.2510

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.6499  
 -5.5399

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. T. BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



TEST DATA PRINTOUT FOR POINT NO. 6

TEST POINT TITLE  
GAS CONSTANT  
A/CORRECTION  
FLOW RATE  
ROTOR SPEED  
INLET TOTAL PRESSURE  
INLET TOTAL TEMPERATURE  
INLET INCHES  
INLET INCHES

510290605040  
51.6202  
1.0000  
18.0760  
14.6944  
518.708  
198.316  
96567

ROTOR OUTLET TOTAL PRESSURE ( 2 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 16.0000  |
| 5.1250 | 16.0000  |
| 5.1250 | 16.0000  |
| 5.1250 | 16.0000  |
| 5.1250 | 16.0000  |
| 5.1250 | 16.0000  |
| 5.1250 | 16.0000  |
| 5.1250 | 16.0000  |

ROTOR OUTLET TOTAL TEMPERATURE ( 3 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 5.1250 | 16.0000   | 16.0000   |
| 5.1250 | 16.0000   | 16.0000   |
| 5.1250 | 16.0000   | 16.0000   |
| 5.1250 | 16.0000   | 16.0000   |
| 5.1250 | 16.0000   | 16.0000   |
| 5.1250 | 16.0000   | 16.0000   |
| 5.1250 | 16.0000   | 16.0000   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |
| 5.1250 | 515.679     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 5.1250 | 7.727 |
| 5.1250 | 7.727 |
| 5.1250 | 7.727 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 14.4750  
 -8.0010 14.5000  
 -7.7510 14.6000  
 -7.5010 14.7000  
 -7.2510 14.8000  
 -7.0010 14.9000  
 -6.7510 15.0000  
 -6.5010 15.1000  
 -6.2510 15.2000  
 -6.0010 15.3000  
 -5.7510 15.4000  
 -5.5010 15.5000  
 -5.2510 15.6000  
 -5.0010 15.7000  
 -4.7510 15.8000  
 -4.5010 15.9000  
 -4.2510 16.0000  
 -4.0010 16.1000  
 -3.7510 16.2000  
 -3.5010 16.3000  
 -3.2510 16.4000  
 -3.0010 16.5000  
 -2.7510 16.6000  
 -2.5010 16.7000  
 -2.2510 16.8000  
 -2.0010 16.9000  
 -1.7510 17.0000  
 -1.5010 17.1000  
 -1.2510 17.2000  
 -1.0010 17.3000  
 -0.7510 17.4000  
 -0.5010 17.5000  
 -0.2510 17.6000  
 -0.0010 17.7000  
 -0.2510 17.8000  
 -0.5010 17.9000  
 -0.7510 18.0000  
 -1.0010 18.1000  
 -1.2510 18.2000  
 -1.5010 18.3000  
 -1.7510 18.4000  
 -2.0010 18.5000  
 -2.2510 18.6000  
 -2.5010 18.7000  
 -2.7510 18.8000  
 -3.0010 18.9000  
 -3.2510 19.0000  
 -3.5010 19.1000  
 -3.7510 19.2000  
 -4.0010 19.3000  
 -4.2510 19.4000  
 -4.5010 19.5000  
 -4.7510 19.6000  
 -5.0010 19.7000  
 -5.2510 19.8000  
 -5.5010 19.9000  
 -5.7510 20.0000  
 -6.0010 20.1000  
 -6.2510 20.2000  
 -6.5010 20.3000  
 -6.7510 20.4000  
 -7.0010 20.5000  
 -7.2510 20.6000  
 -7.5010 20.7000  
 -7.7510 20.8000  
 -8.0010 20.9000  
 -8.2510 21.0000  
 -8.5010 21.1000  
 -8.7510 21.2000  
 -9.0010 21.3000  
 -9.2510 21.4000  
 -9.5010 21.5000  
 -9.7510 21.6000  
 -10.0010 21.7000  
 -10.2510 21.8000  
 -10.5010 21.9000  
 -10.7510 22.0000  
 -11.0010 22.1000  
 -11.2510 22.2000  
 -11.5010 22.3000  
 -11.7510 22.4000  
 -12.0010 22.5000  
 -12.2510 22.6000  
 -12.5010 22.7000  
 -12.7510 22.8000  
 -13.0010 22.9000  
 -13.2510 23.0000  
 -13.5010 23.1000  
 -13.7510 23.2000  
 -14.0010 23.3000  
 -14.2510 23.4000  
 -14.5010 23.5000  
 -14.7510 23.6000  
 -15.0010 23.7000  
 -15.2510 23.8000  
 -15.5010 23.9000  
 -15.7510 24.0000  
 -16.0010 24.1000  
 -16.2510 24.2000  
 -16.5010 24.3000  
 -16.7510 24.4000  
 -17.0010 24.5000  
 -17.2510 24.6000  
 -17.5010 24.7000  
 -17.7510 24.8000  
 -18.0010 24.9000  
 -18.2510 25.0000  
 -18.5010 25.1000  
 -18.7510 25.2000  
 -19.0010 25.3000  
 -19.2510 25.4000  
 -19.5010 25.5000  
 -19.7510 25.6000  
 -20.0010 25.7000  
 -20.2510 25.8000  
 -20.5010 25.9000  
 -20.7510 26.0000  
 -21.0010 26.1000  
 -21.2510 26.2000  
 -21.5010 26.3000  
 -21.7510 26.4000  
 -22.0010 26.5000  
 -22.2510 26.6000  
 -22.5010 26.7000  
 -22.7510 26.8000  
 -23.0010 26.9000  
 -23.2510 27.0000  
 -23.5010 27.1000  
 -23.7510 27.2000  
 -24.0010 27.3000  
 -24.2510 27.4000  
 -24.5010 27.5000  
 -24.7510 27.6000  
 -25.0010 27.7000  
 -25.2510 27.8000  
 -25.5010 27.9000  
 -25.7510 28.0000  
 -26.0010 28.1000  
 -26.2510 28.2000  
 -26.5010 28.3000  
 -26.7510 28.4000  
 -27.0010 28.5000  
 -27.2510 28.6000  
 -27.5010 28.7000  
 -27.7510 28.8000  
 -28.0010 28.9000  
 -28.2510 29.0000  
 -28.5010 29.1000  
 -28.7510 29.2000  
 -29.0010 29.3000  
 -29.2510 29.4000  
 -29.5010 29.5000  
 -29.7510 29.6000  
 -30.0010 29.7000  
 -30.2510 29.8000  
 -30.5010 29.9000  
 -30.7510 30.0000  
 -31.0010 30.1000  
 -31.2510 30.2000  
 -31.5010 30.3000  
 -31.7510 30.4000  
 -32.0010 30.5000  
 -32.2510 30.6000  
 -32.5010 30.7000  
 -32.7510 30.8000  
 -33.0010 30.9000  
 -33.2510 31.0000  
 -33.5010 31.1000  
 -33.7510 31.2000  
 -34.0010 31.3000  
 -34.2510 31.4000  
 -34.5010 31.5000  
 -34.7510 31.6000  
 -35.0010 31.7000  
 -35.2510 31.8000  
 -35.5010 31.9000  
 -35.7510 32.0000  
 -36.0010 32.1000  
 -36.2510 32.2000  
 -36.5010 32.3000  
 -36.7510 32.4000  
 -37.0010 32.5000  
 -37.2510 32.6000  
 -37.5010 32.7000  
 -37.7510 32.8000  
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 -40.0010 33.7000  
 -40.2510 33.8000  
 -40.5010 33.9000  
 -40.7510 34.0000  
 -41.0010 34.1000  
 -41.2510 34.2000  
 -41.5010 34.3000  
 -41.7510 34.4000  
 -42.0010 34.5000  
 -42.2510 34.6000  
 -42.5010 34.7000  
 -42.7510 34.8000  
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 -43.7510 35.2000  
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 -44.2510 35.4000  
 -44.5010 35.5000  
 -44.7510 35.6000  
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 -45.2510 35.8000  
 -45.5010 35.9000  
 -45.7510 36.0000  
 -46.0010 36.1000  
 -46.2510 36.2000  
 -46.5010 36.3000  
 -46.7510 36.4000  
 -47.0010 36.5000  
 -47.2510 36.6000  
 -47.5010 36.7000  
 -47.7510 36.8000  
 -48.0010 36.9000  
 -48.2510 37.0000  
 -48.5010 37.1000  
 -48.7510 37.2000  
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 -49.2510 37.4000  
 -49.5010 37.5000  
 -49.7510 37.6000  
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 -55.5010 39.9000  
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 -109.7510 61.6000  
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 -119.2510 65.4000  
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 -119.7510 65.6000  
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 -120.2510 65.8000  
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 -125.2510 67.8000  
 -125.5010 67.9000  
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 -126.7510 68.4000  
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 -127.2510 68.6000  
 -127.5010 68.7000  
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 -130.5010 69.9000  
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 -132.5010 70.7000  
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 -137.5010 72.7000  
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 -138.0010 72.9000  
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 -138.5010 73.1000  
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 -139.0010 73.3000  
 -139.2510 73.4000  
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 -140.0010 73.7000  
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 -140.5010 73.9000  
 -140.7510 74.0000  
 -141.0010 74.1000  
 -141.2510 74.2000  
 -141.5010 74.3000  
 -141.7510 74.4000  
 -142.0010 74.5000  
 -142.2510 74.6000  
 -142.5010 74.7000  
 -142.7510 74.8000  
 -143.0010 74.9000  
 -143.2510 75.0000  
 -143.5010 75.10



# TEST DATA PRINTOUT FOR POINT NO. 7

TEST POINT TITLE  
 GAS CONSTANT  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/PSI IN/STOI

51029070500  
 51.6177  
 12.3553  
 5092.1  
 51.0709  
 50.2235  
 .90753

## ROTOR OUTLET TOTAL PRESSURE ( 8 POINTS)

| RADIUS  | PRESSURE |
|---------|----------|
| 5.12500 | 10.1344  |
| 5.12500 | 10.1344  |
| 5.12500 | 10.1344  |
| 5.12500 | 10.1344  |
| 5.12500 | 10.1344  |
| 5.12500 | 10.1344  |
| 5.12500 | 10.1344  |
| 5.12500 | 10.1344  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 8 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 5.12500 | 15.071      |
| 5.12500 | 15.071      |
| 5.12500 | 15.071      |
| 5.12500 | 15.071      |
| 5.12500 | 15.071      |
| 5.12500 | 15.071      |
| 5.12500 | 15.071      |
| 5.12500 | 15.071      |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS  | MEAN PRES | PEAK PRES |
|---------|-----------|-----------|
| 6.12500 | 10.1344   | 10.1344   |
| 6.12500 | 10.1344   | 10.1344   |
| 6.12500 | 10.1344   | 10.1344   |
| 6.12500 | 10.1344   | 10.1344   |
| 6.12500 | 10.1344   | 10.1344   |
| 6.12500 | 10.1344   | 10.1344   |
| 6.12500 | 10.1344   | 10.1344   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 6.12500 | 15.071      |
| 6.12500 | 15.071      |
| 6.12500 | 15.071      |
| 6.12500 | 15.071      |
| 6.12500 | 15.071      |
| 6.12500 | 15.071      |
| 6.12500 | 15.071      |

## STAGE OUTLET FLOW ANGLE ( 3 POINTS)

| RADIUS  | ANGLE |
|---------|-------|
| 7.12500 | 1.510 |
| 7.12500 | 1.510 |
| 7.12500 | 1.510 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 14.5562  |
| -8.0010 | 14.6164  |
| -7.7510 | 14.7401  |
| -7.5010 | 14.8378  |
| -7.2510 | 15.1205  |
| -7.0010 | 15.2850  |
| -6.7510 | 15.4070  |
| -6.5010 | 15.4121  |
| -6.2510 | 15.5575  |
| -6.0010 | 15.5406  |
| -5.7510 | 15.7054  |
| -5.5010 | 15.5353  |
| -5.2510 | 15.5355  |
| -5.0010 | 15.5355  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 15.5171  |
| -5.080  | 15.5171  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |
| NJUMP   | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



50% SPEEDLINE PHASE 11 INPUT DATA



PROGRAM UD0200 - AXIAL COMPRESSOR TEST DATA ANALYSIS  
 FIXED DATA PRINTOUT  
 -----  
 RTFC CONFIGURATION #1, 502 SPEED, ACROSS-BLADE ANALYSIS 23MAR76

NUMBER OF STATIONS 11  
 NUMBER OF STAGES 11  
 MAXIMUM NUMBER OF ITERATIONS 100  
 MAXIMUM NUMBER OF SOURCE INDICATOR 1  
 TOTAL PRESSURE SOURCE INDICATOR 1  
 TOTAL TEMPERATURE SOURCE INDICATOR 1  
 STATION NUMBER FOR SOURCE EXIT DATA 11  
 STATION NUMBER FOR SOURCE EXIT DATA 11  
 NUMBER OF ROTOR BLADES 1  
 NUMBER OF STATOR BLADES 1  
 MAXIMUM NUMBER OF LINES PER PAGE 100  
 NPLOT 1

ANALYSIS SPECIFICATION  
 STATION 1 SPECIFIED BY 2 POINTS

RSTH XSTH  
 0.0000 -10.4300  
 13.3030 -10.4300

STATION 2 SPECIFIED BY 2 POINTS

RSTH XSTH  
 0.0000 -14.9000  
 9.4300 -14.8300

STATION 3 SPECIFIED BY 2 POINTS

RSTH XSTH  
 0.0000 -10.6500  
 0.9800 -12.8500

STATION 4 SPECIFIED BY 2 POINTS

RSTH XSTH  
 1.5400 -9.7500  
 8.9530 -11.1300

STATION 5 SPECIFIED BY 2 POINTS

RSTH XSTH  
 2.0550 -9.1327  
 6.5000 -9.6093

STATION 6 SPECIFIED BY 2 POINTS

RSTH XSTH  
 2.3500 -8.2500  
 6.3000 -8.6500

STATION 7 SPECIFIED BY 6 POINTS

RSTH XSTH  
 2.6510 -7.1530  
 3.4020 -7.2500  
 4.0270 -7.3500  
 4.7350 -7.4500  
 5.4500 -7.5500



# STATION 8 SPECIFIED BY 9 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.4612 | -5.3150 |
| 4.6000 | -5.3040 |
| 4.8000 | -5.2680 |
| 5.0000 | -5.1840 |
| 5.1064 | -5.1717 |
| 5.8592 | -5.2485 |
| 6.7945 | -5.3708 |
| 7.8661 | -5.6016 |
| 8.5000 | -5.7840 |

# STATION 9 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.5534 | -5.1700 |
| 5.2000 | -5.0000 |
| 5.6000 | -4.9500 |
| 6.5000 | -5.3500 |

# STATION 10 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.5435 | -5.6750 |
| 5.2500 | -4.7750 |
| 5.8200 | -4.6540 |
| 6.5000 | -4.9000 |

# STATION 11 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.5314 | -2.4949 |
| 6.5000 | -2.2174 |

# STATION 12 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.7326 | -0.9200 |
| 6.5000 | -0.9200 |

# STATION 13 SPECIFIED BY 2 POINTS

| RSTN   | XSTN   |
|--------|--------|
| 5.7326 | 6.5000 |
| 6.5000 | 6.5000 |

# STATION CALCULATION SPECIFICATION AND BLADING DATA

|           |           |            |          |
|-----------|-----------|------------|----------|
| STATION 2 | NCALC = 0 | NDATA = -0 | NBL = -0 |
| STATION 3 | NCALC = 0 | NDATA = -0 | NBL = -0 |
| STATION 4 | NCALC = 0 | NDATA = -0 | NBL = -0 |
| STATION 5 | NCALC = 0 | NDATA = -0 | NBL = -0 |
| STATION 6 | NCALC = 0 | NDATA = -0 | NBL = -0 |



[illegible]



ROTOR GENERALIZED PERFORMANCE    LOSS 2PTS    DEVIATION 2PTS

M-COORD    LOSS COEFF/TOTAL LOSS COEFF

0.0000    0.0000  
1.0000    1.0000

OUTLET RADIUS = 0.0000

M-COORD    DEVIATION ANGLE (DEGREES)

0.0000    0.0000  
1.0000    1.0000

STATOR GENERALIZED PERFORMANCE    LOSS 2PTS    DEVIATION 2PTS

M-COORD    LOSS COEFF/TOTAL LOSS COEFF

0.0000    0.0000  
1.0000    1.0000

OUTLET RADIUS = 0.0000

M-COORD    DEVIATION ANGLE (DEGREES)

0.0000    0.0000  
1.0000    1.0000

NUMBER OF TEST POINTS TO BE ANALYSED = 7

PSCALE= 0.00 PLOWER= 0.00 DAMPF= 7.000 NSAVE= 1

NMAX= 0 HFORCE= 0 NEX= 2



# TEST DATA PRINTOUT FOR POINT NO. 1

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 MOTOR SPEED  
 INLET TOTAL PRESSURE  
 P IN/IN (IN/IN)  
 P IN/P IN (IN/IN)

= 51.0290800050  
 = 53.98209  
 = 28.91451  
 = 10.91451  
 = 17.88133  
 = 1.98133  
 = .9133

## MOTOR OUTLET TOTAL PRESSURE ( 9 POINTS )

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 17.6673  |
| 5.1250 | 17.6690  |
| 5.1250 | 17.6711  |
| 5.1250 | 17.6710  |
| 5.1250 | 17.6711  |
| 5.1250 | 17.6711  |
| 5.1250 | 17.6711  |
| 5.1250 | 17.6711  |
| 5.1250 | 17.6711  |

## MOTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS )

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 52.703      |
| 5.1250 | 52.703      |
| 5.1250 | 52.703      |
| 5.1250 | 52.703      |
| 5.1250 | 52.703      |
| 5.1250 | 52.703      |
| 5.1250 | 52.703      |
| 5.1250 | 52.703      |
| 5.1250 | 52.703      |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS )

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1250 | 17.5593   | 17.7443   |
| 6.1250 | 17.5593   | 17.7443   |
| 6.1250 | 17.5593   | 17.7443   |
| 6.1250 | 17.5593   | 17.7443   |
| 6.1250 | 17.5593   | 17.7443   |
| 6.1250 | 17.5593   | 17.7443   |
| 6.1250 | 17.5593   | 17.7443   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS )

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1250 | 52.703      |
| 6.1250 | 52.703      |
| 6.1250 | 52.703      |
| 6.1250 | 52.703      |
| 6.1250 | 52.703      |
| 6.1250 | 52.703      |
| 6.1250 | 52.703      |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS )

| RADIUS | ANGLE |
|--------|-------|
| 7.4220 | 1.194 |
| 7.4220 | 1.194 |
| 7.4220 | 1.194 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 14.0679  
 -8.0010 14.1765  
 -7.7510 14.3337  
 -7.5010 14.5783  
 -7.2510 15.0599  
 -7.0010 15.4220  
 -6.7510 15.6121  
 -6.5010 15.7185  
 -6.2510 15.8500  
 -6.0010 15.9183  
 -5.7510 16.0876  
 -5.5010 16.0876  
 -5.2510 15.8794  
 -5.0010 15.8794

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499 15.7750  
 -.5088 15.7750

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | HIJ ADD. DEVIATION | DIST. FACTOR | FRAC. IE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NHACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 2

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 ROTOR TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN/STD  
 = 510290900150  
 = 53.6086  
 = 0.21592  
 = 20.43652  
 = 10.0000  
 = 51.0000  
 = 0.0000

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 17.6706  |
| 5.5000 | 17.5923  |
| 5.8750 | 17.7472  |
| 6.2500 | 17.6071  |
| 6.6250 | 17.7364  |
| 7.0000 | 17.5679  |
| 7.3750 | 17.7522  |
| 7.7500 | 17.5669  |
| 8.1250 | 17.5380  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 545.010     |
| 5.5000 | 546.503     |
| 5.8750 | 548.439     |
| 6.2500 | 548.012     |
| 6.6250 | 547.636     |
| 7.0000 | 549.766     |
| 7.3750 | 551.344     |
| 7.7500 | 553.774     |
| 8.1250 | 559.147     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 17.5805   | 17.7534   |
| 6.4660 | 17.6969   | 17.6397   |
| 6.8050 | 17.6344   | 17.7751   |
| 7.1440 | 17.6270   | 17.7593   |
| 7.4830 | 17.6213   | 17.7557   |
| 7.8220 | 17.5398   | 17.6286   |
| 8.1610 | 17.4672   | 17.5817   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 547.104     |
| 6.4660 | 548.673     |
| 6.8050 | 548.648     |
| 7.1440 | 549.554     |
| 7.4830 | 551.735     |
| 7.8220 | 554.663     |
| 8.1610 | 555.937     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | 7.113 |
| 7.1440 | 7.320 |
| 6.4660 | 4.588 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 14.1157  |
| -8.0010 | 14.2317  |
| -7.7510 | 14.3685  |
| -7.5010 | 14.5144  |
| -7.2510 | 15.1025  |
| -7.0010 | 15.5300  |
| -6.7510 | 15.6913  |
| -6.5010 | 15.7483  |
| -6.2510 | 15.9281  |
| -6.0010 | 15.9739  |
| -5.7510 | 16.1622  |
| -5.5674 | 16.0046  |
| -5.5190 | 16.0046  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 15.9063  |
| -5.5080 | 15.9063  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.1000   | 1.5000       | -0.000             | -0.000       | -0.000            |
| 8       | 0.1000   | 1.5000       | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 11      | 0.0500   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | 0.0500   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | 0.0500   | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NHACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |
| NJUMP=  | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



# TEST DATA PRINTOUT FOR POINT NO. 1

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 INLET INLET  
 P INLET INLET

51291101050  
 53.3082  
 27.3267  
 10.0001  
 14.0001  
 1.0001  
 1.0001

## ROTOR INLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 0.1220 | 17.6792  |
| 0.1220 | 17.6792  |
| 0.1220 | 17.6792  |
| 0.1220 | 17.6792  |
| 0.1220 | 17.6792  |
| 0.1220 | 17.6792  |
| 0.1220 | 17.6792  |
| 0.1220 | 17.6792  |
| 0.1220 | 17.6792  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 3 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 0.1220 | 17.6792   | 17.6792   |
| 0.1220 | 17.6792   | 17.6792   |
| 0.1220 | 17.6792   | 17.6792   |
| 0.1220 | 17.6792   | 17.6792   |
| 0.1220 | 17.6792   | 17.6792   |
| 0.1220 | 17.6792   | 17.6792   |
| 0.1220 | 17.6792   | 17.6792   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |
| 0.1220 | 5.0001      |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE  |
|--------|--------|
| 0.1220 | 1.0001 |
| 0.1220 | 1.0001 |
| 0.1220 | 1.0001 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7310 | 14.1293  |
| -8.0010 | 14.2448  |
| -7.7510 | 14.3765  |
| -7.5010 | 14.6233  |
| -7.2510 | 15.1143  |
| -7.0010 | 15.5707  |
| -6.7510 | 15.9078  |
| -6.5010 | 15.9551  |
| -6.2510 | 15.9885  |
| -6.0010 | 16.1854  |
| -5.7510 | 16.0365  |
| -5.5010 | 16.0365  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8+39 | 15.9412  |
| -2.5080 | 15.9412  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. T. BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 4

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW AREA  
 ROTOR TOTAL PRESSURE  
 ROTOR TOTAL TEMPERATURE  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 INLET INLET  
 INLET INLET

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 0.000  | 17.6723  |
| 0.000  | 17.6723  |
| 0.000  | 17.6723  |
| 0.000  | 17.6723  |
| 0.000  | 17.6723  |
| 0.000  | 17.6723  |
| 0.000  | 17.6723  |
| 0.000  | 17.6723  |
| 0.000  | 17.6723  |
| 0.000  | 17.6723  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.000  | 546.033     |
| 0.000  | 546.033     |
| 0.000  | 546.033     |
| 0.000  | 546.033     |
| 0.000  | 546.033     |
| 0.000  | 546.033     |
| 0.000  | 546.033     |
| 0.000  | 546.033     |
| 0.000  | 546.033     |
| 0.000  | 546.033     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 0.000  | 17.6232   | 17.7723   |
| 0.000  | 17.6232   | 17.6830   |
| 0.000  | 17.6232   | 17.6506   |
| 0.000  | 17.6232   | 17.6038   |
| 0.000  | 17.6232   | 17.5070   |
| 0.000  | 17.6232   | 17.4277   |
| 0.000  | 17.6232   | 17.7270   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.000  | 547.347     |
| 0.000  | 547.347     |
| 0.000  | 547.347     |
| 0.000  | 547.347     |
| 0.000  | 547.347     |
| 0.000  | 547.347     |
| 0.000  | 547.347     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 0.000  | 509   |
| 0.000  | 1.584 |
| 0.000  | 6.520 |



**X-CORD** **PRESSURE**

[illegible]

**X-COORD**

0805-2-6548  
2060-9116-0907

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADJ. DEVIATION | DIST. FACTOR | FRAC. 1/2 BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|--------------------|
| 1       | 1        | 1            | 1                   | 1            | 1                  |
| 2       | 2        | 2            | 2                   | 2            | 2                  |
| 3       | 3        | 3            | 3                   | 3            | 3                  |
| 4       | 4        | 4            | 4                   | 4            | 4                  |
| 5       | 5        | 5            | 5                   | 5            | 5                  |
| 6       | 6        | 6            | 6                   | 6            | 6                  |
| 7       | 7        | 7            | 7                   | 7            | 7                  |
| 8       | 8        | 8            | 8                   | 8            | 8                  |
| 9       | 9        | 9            | 9                   | 9            | 9                  |
| 10      | 10       | 10           | 10                  | 10           | 10                 |
| 11      | 11       | 11           | 11                  | 11           | 11                 |
| 12      | 12       | 12           | 12                  | 12           | 12                 |
| 13      | 13       | 13           | 13                  | 13           | 13                 |
| 14      | 14       | 14           | 14                  | 14           | 14                 |
| 15      | 15       | 15           | 15                  | 15           | 15                 |
| 16      | 16       | 16           | 16                  | 16           | 16                 |
| 17      | 17       | 17           | 17                  | 17           | 17                 |
| 18      | 18       | 18           | 18                  | 18           | 18                 |
| 19      | 19       | 19           | 19                  | 19           | 19                 |
| 20      | 20       | 20           | 20                  | 20           | 20                 |
| 21      | 21       | 21           | 21                  | 21           | 21                 |
| 22      | 22       | 22           | 22                  | 22           | 22                 |
| 23      | 23       | 23           | 23                  | 23           | 23                 |
| 24      | 24       | 24           | 24                  | 24           | 24                 |
| 25      | 25       | 25           | 25                  | 25           | 25                 |
| 26      | 26       | 26           | 26                  | 26           | 26                 |
| 27      | 27       | 27           | 27                  | 27           | 27                 |
| 28      | 28       | 28           | 28                  | 28           | 28                 |
| 29      | 29       | 29           | 29                  | 29           | 29                 |
| 30      | 30       | 30           | 30                  | 30           | 30                 |
| 31      | 31       | 31           | 31                  | 31           | 31                 |
| 32      | 32       | 32           | 32                  | 32           | 32                 |
| 33      | 33       | 33           | 33                  | 33           | 33                 |
| 34      | 34       | 34           | 34                  | 34           | 34                 |
| 35      | 35       | 35           | 35                  | 35           | 35                 |
| 36      | 36       | 36           | 36                  | 36           | 36                 |
| 37      | 37       | 37           | 37                  | 37           | 37                 |
| 38      | 38       | 38           | 38                  | 38           | 38                 |
| 39      | 39       | 39           | 39                  | 39           | 39                 |
| 40      | 40       | 40           | 40                  | 40           | 40                 |
| 41      | 41       | 41           | 41                  | 41           | 41                 |
| 42      | 42       | 42           | 42                  | 42           | 42                 |
| 43      | 43       | 43           | 43                  | 43           | 43                 |
| 44      | 44       | 44           | 44                  | 44           | 44                 |
| 45      | 45       | 45           | 45                  | 45           | 45                 |
| 46      | 46       | 46           | 46                  | 46           | 46                 |
| 47      | 47       | 47           | 47                  | 47           | 47                 |
| 48      | 48       | 48           | 48                  | 48           | 48                 |
| 49      | 49       | 49           | 49                  | 49           | 49                 |
| 50      | 50       | 50           | 50                  | 50           | 50                 |
| 51      | 51       | 51           | 51                  | 51           | 51                 |
| 52      | 52       | 52           | 52                  | 52           | 52                 |
| 53      | 53       | 53           | 53                  | 53           | 53                 |
| 54      | 54       | 54           | 54                  | 54           | 54                 |
| 55      | 55       | 55           | 55                  | 55           | 55                 |
| 56      | 56       | 56           | 56                  | 56           | 56                 |
| 57      | 57       | 57           | 57                  | 57           | 57                 |
| 58      | 58       | 58           | 58                  | 58           | 58                 |
| 59      | 59       | 59           | 59                  | 59           | 59                 |
| 60      | 60       | 60           | 60                  | 60           | 60                 |
| 61      | 61       | 61           | 61                  | 61           | 61                 |
| 62      | 62       | 62           | 62                  | 62           | 62                 |
| 63      | 63       | 63           | 63                  | 63           | 63                 |
| 64      | 64       | 64           | 64                  | 64           | 64                 |
| 65      | 65       | 65           | 65                  | 65           | 65                 |
| 66      | 66       | 66           | 66                  | 66           | 66                 |
| 67      | 67       | 67           | 67                  | 67           | 67                 |
| 68      | 68       | 68           | 68                  | 68           | 68                 |
| 69      | 69       | 69           | 69                  | 69           | 69                 |
| 70      | 70       | 70           | 70                  | 70           | 70                 |
| 71      | 71       | 71           | 71                  | 71           | 71                 |
| 72      | 72       | 72           | 72                  | 72           | 72                 |
| 73      | 73       | 73           | 73                  | 73           | 73                 |
| 74      | 74       | 74           | 74                  | 74           | 74                 |

[illegible][illegible]

**NJUMP=0**



# TEST DATA PRINTOUT FOR POINT NO. 3

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOWRATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 T IN/1 IN(STD)  
 P IN/P IN(STD)

= 511250102350  
 = 53.4896  
 = 0.99570  
 = 26.6477  
 = 1011.3  
 = 14.6544  
 = 51.8708  
 = 0.8531  
 = 0.94608

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 17.7004  |
| 5.5000 | 17.6470  |
| 5.8750 | 17.6045  |
| 6.2500 | 17.5717  |
| 6.6250 | 17.5423  |
| 7.0000 | 17.5181  |
| 7.3750 | 17.4945  |
| 7.7500 | 17.4715  |
| 8.1250 | 17.4493  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 545.292     |
| 5.5000 | 546.375     |
| 5.8750 | 548.867     |
| 6.2500 | 548.277     |
| 6.6250 | 547.655     |
| 7.0000 | 550.084     |
| 7.3750 | 553.943     |
| 7.7500 | 557.062     |
| 8.1250 | 563.204     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1220 | 17.6294   | 17.7787   |
| 6.4660 | 17.6033   | 17.6075   |
| 6.8100 | 17.5880   | 17.4954   |
| 7.1540 | 17.5824   | 17.4022   |
| 7.4980 | 17.5764   | 17.3143   |
| 7.8420 | 17.5699   | 17.2277   |
| 8.1860 | 17.5639   | 17.1496   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1220 | 546.760     |
| 6.4660 | 548.604     |
| 6.8100 | 548.324     |
| 7.1540 | 548.015     |
| 7.4980 | 548.601     |
| 7.8420 | 555.129     |
| 8.1860 | 555.129     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | 1.116 |
| 7.1870 | 1.577 |
| 6.4560 | 4.577 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 14.1764  
 -8.0010 14.2940  
 -7.7510 14.3351  
 -7.5010 14.6392  
 -7.2510 15.1695  
 -7.0010 15.5702  
 -6.7510 15.7580  
 -6.5010 15.8521  
 -6.2510 16.0177  
 -6.0010 16.0284  
 -5.7510 16.2410  
 -5.5010 16.1433  
 -5.2510 16.1435

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499 16.0505  
 -.5030 16.0505

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



TEST DATA PRINTOUT FOR POINT NO. 5

TEST POINT TITLE  
 GAS CONSTANT  
 AIR FRACTION  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN/STO

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 17.7017     |
| 5.1250 | 17.6233     |
| 5.1250 | 17.7000     |
| 5.1250 | 17.6332     |
| 5.1250 | 17.6382     |
| 5.1250 | 17.6382     |
| 5.1250 | 17.6382     |
| 5.1250 | 17.6382     |
| 5.1250 | 17.6382     |
| 5.1250 | 17.6382     |

ROTOR OUTLET TOTAL TEMPERATURE ( 3 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 546.237     |
| 5.1250 | 546.237     |
| 5.1250 | 546.237     |
| 5.1250 | 546.237     |
| 5.1250 | 546.237     |
| 5.1250 | 546.237     |
| 5.1250 | 546.237     |
| 5.1250 | 546.237     |
| 5.1250 | 546.237     |
| 5.1250 | 546.237     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 17.6315   | 17.7822   |
| 6.1270 | 17.7020   | 17.8976   |
| 6.1270 | 17.6315   | 17.8469   |
| 6.1270 | 17.6315   | 17.8469   |
| 6.1270 | 17.6315   | 17.8469   |
| 6.1270 | 17.6315   | 17.8469   |
| 6.1270 | 17.6315   | 17.8469   |
| 6.1270 | 17.6315   | 17.8469   |
| 6.1270 | 17.6315   | 17.8469   |
| 6.1270 | 17.6315   | 17.8469   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 547.001     |
| 6.1270 | 547.001     |
| 6.1270 | 547.001     |
| 6.1270 | 547.001     |
| 6.1270 | 547.001     |
| 6.1270 | 547.001     |
| 6.1270 | 547.001     |
| 6.1270 | 547.001     |
| 6.1270 | 547.001     |
| 6.1270 | 547.001     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0220 | 4.49  |
| 7.0220 | 1.817 |
| 6.4560 | 4.309 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 14.2302  |
| -8.0010 | 14.3247  |
| -7.7510 | 14.4229  |
| -7.5010 | 14.6823  |
| -7.2510 | 15.2083  |
| -7.0010 | 15.5877  |
| -6.7510 | 15.8010  |
| -6.5010 | 15.8871  |
| -6.2510 | 16.0673  |
| -6.0010 | 16.0563  |
| -5.7510 | 16.2946  |
| -5.5010 | 16.2345  |
| -5.2510 | 16.2345  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 16.1384  |
| -2.5080 | 16.1384  |

# DISTRIBUED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TEE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |
| NJUMP=  | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



# TEST DATA PRINTOUT FOR POINT NO. 7

TEST POINT TITLE  
 GAS CONSTANT  
 FLUX FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 INLET INLET  
 P IN/P INLET

= 51125050+450  
 = 53.4894  
 = 25.2066  
 = 1011.44  
 = 17.6788  
 = 192.628  
 = .94637

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 17.6982  |
| 5.5000 | 17.6741  |
| 5.8750 | 17.6336  |
| 6.2500 | 17.7000  |
| 6.6250 | 17.7845  |
| 7.0000 | 17.6001  |
| 7.3750 | 17.8127  |
| 7.7500 | 17.6996  |
| 8.1250 | 17.6506  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 545.567     |
| 5.5000 | 546.573     |
| 5.8750 | 549.104     |
| 6.2500 | 548.733     |
| 6.6250 | 548.285     |
| 7.0000 | 550.332     |
| 7.3750 | 557.567     |
| 7.7500 | 560.335     |
| 8.1250 | 567.439     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 17.6179   | 17.7807   |
| 6.4660 | 17.7254   | 17.8559   |
| 6.8050 | 17.6811   | 17.8760   |
| 7.1440 | 17.5768   | 17.7788   |
| 7.4830 | 17.5369   | 17.7663   |
| 7.8220 | 17.5287   | 17.8114   |
| 8.1610 | 17.5561   | 17.8223   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 547.047     |
| 6.4660 | 548.530     |
| 6.8050 | 550.104     |
| 7.1440 | 551.358     |
| 7.4830 | 554.391     |
| 7.8220 | 558.257     |
| 8.1610 | 560.133     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE  |
|--------|--------|
| 7.8220 | - .001 |
| 7.1440 | 2.264  |
| 6.4660 | 4.710  |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 14.2976  |
| -8.3019 | 14.3383  |
| -7.7510 | 14.4702  |
| -7.5010 | 14.6972  |
| -7.2510 | 15.1825  |
| -7.0010 | 15.5470  |
| -6.7510 | 15.7741  |
| -6.5010 | 15.8542  |
| -6.2510 | 16.0777  |
| -6.0010 | 16.0508  |
| -5.7510 | 16.3282  |
| -5.5674 | 16.2791  |
| -5.5190 | 16.2791  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 16.1773  |
| -2.5030 | 16.1773  |

# DISTRIBUED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TEE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 8       | .1000    | .5000        | -0.000             | -0.000       | -0.000             |
| 9       | 0.0000   | .5000        | -0.000             | -0.000       | -0.000             |
| 10      | 0.0000   | .5000        | -0.000             | -0.000       | -0.000             |
| 11      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000             |
| 12      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000             |
| 13      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000             |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |
| NJUMP=  | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



60% SPEEDLINE PHASE II INPUT DATA



PROGRAM UD0200 --- AXIAL COMPRESSOR TEST DATA ANALYSIS

FIXED DATA PRINTOUT

HTFC CONFIGURATION #1, 50% SPEED, ACROSS-BLADE ANALYSIS, 24MAR76

NUMBER OF STATIONS 13  
 NUMBER OF STREAM LINES 120  
 MAXIMUM NUMBER OF ITERATIONS 200  
 MAXIMUM NUMBER OF ARBITRARY ITERATIONS 100  
 TOTAL PRESSURE SOURCE INDICATOR 1  
 TOTAL TEMPERATURE SOURCE INDICATOR 1  
 STATION NUMBER FOR SOURCE DATA 1000  
 STATION NUMBER FOR SYC 200  
 NUMBER OF ROTOR BLADES 30  
 MAXIMUM NUMBER OF LINES PER PAGE 50  
 NPLOT 5

ANNULUS SPECIFICATION

STATION 1 SPECIFIED BY 2 POINTS

RSTN XSTN

0.1000 -18.4500  
 13.3000 -18.4500

STATION 2 SPECIFIED BY 2 POINTS

RSTN XSTN

0.0000 -14.9000  
 9.4000 -14.0800

STATION 3 SPECIFIED BY 2 POINTS

RSTN XSTN

0.0000 -10.6500  
 8.9600 -12.8500

STATION 4 SPECIFIED BY 2 POINTS

RSTN XSTN

1.5400 -9.7589  
 8.3500 -11.1380

STATION 5 SPECIFIED BY 2 POINTS

RSTN XSTN

2.0550 -9.1137  
 8.5000 -9.6493

STATION 6 SPECIFIED BY 2 POINTS

RSTN XSTN

2.3500 -9.6500  
 8.5000 -9.6500

STATION 7 SPECIFIED BY 6 POINTS

RSTN XSTN

2.6514 -8.1600  
 3.8058 -8.2045  
 5.0897 -9.2603  
 6.3389 -9.1812  
 7.7161 -7.9612  
 8.5900 -7.8113



# STATION 8 SPECIFIED BY 9 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.4612 | -5.3153 |
| 4.6300 | -5.3030 |
| 4.8000 | -5.2680 |
| 5.0000 | -5.1830 |
| 5.1064 | -5.1717 |
| 5.1852 | -5.2485 |
| 6.7343 | -5.3703 |
| 7.8681 | -5.6915 |
| 8.5000 | -5.7840 |

# STATION 9 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.5534 | -5.1709 |
| 5.2000 | -5.0000 |
| 5.8000 | -4.9500 |
| 6.5000 | -5.3500 |

# STATION 10 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.6435 | -5.3250 |
| 5.2500 | -4.7750 |
| 5.6200 | -4.6500 |
| 6.5000 | -4.9000 |

# STATION 11 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.5314 | -2.4992 |
| 6.5000 | -2.2174 |

# STATION 12 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.7305 | -0.9200 |
| 6.5000 | -0.9200 |

# STATION 13 SPECIFIED BY 2 POINTS

| RSTN   | XSTN   |
|--------|--------|
| 5.7305 | 0.0000 |
| 6.5000 | 0.0000 |

# STATION CALCULATION SPECIFICATION AND SLADING DATA

|           |           |            |          |
|-----------|-----------|------------|----------|
| STATION 2 | NCALC = 0 | NDATA = -0 | N3L = -0 |
| STATION 3 | NCALC = 0 | NDATA = -0 | N3L = -0 |
| STATION 4 | NCALC = 0 | NDATA = -0 | N8L = -0 |
| STATION 5 | NCALC = 0 | NDATA = -0 | N3L = -0 |
| STATION 6 | NCALC = 0 | NDATA = -0 | N9L = -0 |







ROTOR GENERALIZED PERFORMANCE      LOSS   2PTS      DEVIATION   2PTS

    M-COORD    LOSS COEFF/TOTAL LOSS COEFF

        0.0000      0.0000  
        1.0000      1.0000

OUTLET RADIUS = 0.0000

    M-COORD    DEVIATION ANGLE (DEGREES)

        0.0000      0.0000  
        1.0000      1.0000

STATOR GENERALIZED PERFORMANCE      LOSS   2PTS      DEVIATION   2PTS

    M-COORD    LOSS COEFF/TOTAL LOSS COEFF

        0.0000      0.0000  
        1.0000      1.0000

OUTLET RADIUS = 0.0000

    M-COORD    DEVIATION ANGLE (DEGREES)

        0.0000      0.0000  
        1.0000      1.0000

NUMBER OF TEST POINTS TO BE ANALYSED = 7

PSCALE= 0.00 PLOWER= 0.00 DAMPF= 7.000 NSAVE= 1

NMAX= 0 MFORCE= 0 NEX= 2



TEST DATA PRINTOUT FOR POINT NO. 1

TEST POINT TITLE  
 GAS CONSTANT  
 AIR FRACTION  
 FLOW RATE  
 ROTOR TOTAL PRESSURE  
 INLET TOTAL PRESSURE  
 INLET TEMPERATURE  
 P IN/P IN(SI)

= 511250633063  
 = 53.6907  
 = 34.9367  
 = 12123.9  
 = 5106.00  
 = .93183

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.0000 | 12.1422  |
| 5.1250 | 12.0023  |
| 5.2500 | 12.0023  |
| 5.3750 | 12.0023  |
| 5.5000 | 12.0023  |
| 5.6250 | 12.0023  |
| 5.7500 | 12.0023  |
| 5.8750 | 12.0023  |
| 6.0000 | 12.0023  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.0000 | 552.713     |
| 5.1250 | 552.713     |
| 5.2500 | 552.713     |
| 5.3750 | 552.713     |
| 5.5000 | 552.713     |
| 5.6250 | 552.713     |
| 5.7500 | 552.713     |
| 5.8750 | 552.713     |
| 6.0000 | 552.713     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | 4EAM PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1250 | 19.9272   | 19.9272   |
| 6.2500 | 19.9272   | 19.9272   |
| 6.3750 | 19.9272   | 19.9272   |
| 6.5000 | 19.9272   | 19.9272   |
| 6.6250 | 19.9272   | 19.9272   |
| 6.7500 | 19.9272   | 19.9272   |
| 6.8750 | 19.9272   | 19.9272   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1250 | 553.143     |
| 6.2500 | 553.143     |
| 6.3750 | 553.143     |
| 6.5000 | 553.143     |
| 6.6250 | 553.143     |
| 6.7500 | 553.143     |
| 6.8750 | 553.143     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0000 | 1.137 |
| 7.1250 | 1.137 |
| 7.2500 | 1.137 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 13.7213  |
| -8.0010 | 13.9153  |
| -7.7510 | 14.1634  |
| -7.5010 | 14.5205  |
| -7.2510 | 15.2143  |
| -7.0010 | 15.0714  |
| -6.7510 | 16.1875  |
| -6.5010 | 16.4445  |
| -6.2510 | 16.4905  |
| -6.0010 | 16.8250  |
| -5.7510 | 16.5037  |
| -2.5074 | 16.5037  |
| -2.5130 |          |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8493 | 16.3653  |
| -2.5080 | 16.3653  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. DEV. DEVIATION | DIST. FACTOR | FRAC. T.E. BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|---------------------|
| 1       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 2       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 3       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 4       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 5       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 6       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 7       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 8       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 9       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 10      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 11      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 12      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 13      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 2

-----  
 TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 INLET ANGLE  
 P INLET INCHES

511253700263  
 51.9915  
 1.21337  
 12.1337  
 12.1337  
 12.1337  
 12.1337

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 0.1250 | 12.1337  |
| 0.2500 | 12.1337  |
| 0.3750 | 12.1337  |
| 0.5000 | 12.1337  |
| 0.6250 | 12.1337  |
| 0.7500 | 12.1337  |
| 0.8750 | 12.1337  |
| 1.0000 | 12.1337  |
| 1.1250 | 12.1337  |
| 1.2500 | 12.1337  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.1250 | 12.1337     |
| 0.2500 | 12.1337     |
| 0.3750 | 12.1337     |
| 0.5000 | 12.1337     |
| 0.6250 | 12.1337     |
| 0.7500 | 12.1337     |
| 0.8750 | 12.1337     |
| 1.0000 | 12.1337     |
| 1.1250 | 12.1337     |
| 1.2500 | 12.1337     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 0.1250 | 12.1337   | 12.1337   |
| 0.2500 | 12.1337   | 12.1337   |
| 0.3750 | 12.1337   | 12.1337   |
| 0.5000 | 12.1337   | 12.1337   |
| 0.6250 | 12.1337   | 12.1337   |
| 0.7500 | 12.1337   | 12.1337   |
| 0.8750 | 12.1337   | 12.1337   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.1250 | 12.1337     |
| 0.2500 | 12.1337     |
| 0.3750 | 12.1337     |
| 0.5000 | 12.1337     |
| 0.6250 | 12.1337     |
| 0.7500 | 12.1337     |
| 0.8750 | 12.1337     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE   |
|--------|---------|
| 0.1250 | 12.1337 |
| 0.2500 | 12.1337 |
| 0.3750 | 12.1337 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 13.8074  |
| -8.0010 | 14.0043  |
| -7.7510 | 14.2151  |
| -7.5010 | 14.5782  |
| -7.2510 | 15.2797  |
| -7.0010 | 15.8435  |
| -6.7510 | 16.1903  |
| -6.5010 | 16.3041  |
| -6.2510 | 16.5692  |
| -6.0010 | 16.5745  |
| -5.7510 | 16.9329  |
| -5.5674 | 16.7016  |
| -5.5190 | 16.7016  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 16.5685  |
| -5.080  | 16.5685  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TEE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |
| 2       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |
| 3       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |
| 4       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |
| 5       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |
| 6       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |
| 7       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |
| 8       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |
| 9       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |
| 10      | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |
| 11      | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |
| 12      | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |
| 13      | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 3

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN(STO)  
 = 511250901560  
 = 53.4918  
 = 33.99563  
 = 33.1232  
 = 121.6944  
 = 14.6944  
 = 18.708  
 = .95108  
 = .93442

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS  | PRESSURE |
|---------|----------|
| 1.1250  | 19.1620  |
| 3.1250  | 19.0719  |
| 5.1250  | 19.3243  |
| 7.1250  | 19.1261  |
| 9.1250  | 19.2611  |
| 11.1250 | 19.0819  |
| 13.1250 | 19.3154  |
| 15.1250 | 19.1304  |
| 17.1250 | 19.0749  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 1.1250  | 33.0        |
| 3.1250  | 33.0        |
| 5.1250  | 33.0        |
| 7.1250  | 33.0        |
| 9.1250  | 33.0        |
| 11.1250 | 33.0        |
| 13.1250 | 33.0        |
| 15.1250 | 33.0        |
| 17.1250 | 33.0        |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS  | MEAN PRES | PEAK PRES |
|---------|-----------|-----------|
| 1.1250  | 19.0419   | 19.2877   |
| 3.1250  | 19.2212   | 19.4041   |
| 5.1250  | 19.1413   | 19.3763   |
| 7.1250  | 19.1116   | 19.3413   |
| 9.1250  | 19.0919   | 19.3319   |
| 11.1250 | 19.0719   | 19.2107   |
| 13.1250 | 19.0523   | 19.1699   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 1.1250  | 59.525      |
| 3.1250  | 59.1630     |
| 5.1250  | 58.2400     |
| 7.1250  | 58.7311     |
| 9.1250  | 57.511      |
| 11.1250 | 57.2427     |
| 13.1250 | 57.430      |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 1.1250 | 1.191 |
| 3.1250 | 1.277 |
| 5.1250 | 4.271 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 13.3604  |
| -8.0010 | 14.0533  |
| -7.7510 | 14.2460  |
| -7.5010 | 14.3948  |
| -7.2510 | 15.3162  |
| -7.0010 | 15.3329  |
| -6.7510 | 15.2354  |
| -6.5010 | 16.3611  |
| -6.2510 | 16.3287  |
| -6.0010 | 16.3143  |
| -5.7510 | 16.3343  |
| -5.5010 | 16.8157  |
| -5.2510 | 16.8157  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8419 | 16.6812  |
| -2.5080 | 16.6912  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID DEV. ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|-------------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |
| 2       | 0.0000   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |
| 3       | 0.0000   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |
| 4       | 0.0000   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |
| 5       | 0.0000   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |
| 6       | 0.0000   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |
| 7       | 0.0000   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |
| 8       | 0.0000   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |
| 9       | 0.0000   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |
| 10      | 0.0000   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |
| 11      | 0.0000   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |
| 12      | 0.0500   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |
| 13      | 0.0500   | 1.0000       | -0.000                  | -0.0000      | -0.0000           |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |

NMUMP= 0



TEST DATA PRINTOUT FOR POINT NO. +

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/PT IN(STD)  
 = 511250902360  
 = 53.4934  
 = 32.5559  
 = 12143.5  
 = 14.694  
 = 518.708  
 = .95192  
 = .93562

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS  | PRESSURE |
|---------|----------|
| 5.1250  | 19.1602  |
| 6.1250  | 19.0797  |
| 7.1250  | 19.1193  |
| 8.1250  | 19.1277  |
| 9.1250  | 19.0323  |
| 10.1250 | 19.0362  |
| 11.1250 | 19.1718  |
| 12.1250 | 19.0779  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 5.1250  | 558.125     |
| 6.1250  | 558.493     |
| 7.1250  | 558.150     |
| 8.1250  | 558.197     |
| 9.1250  | 558.125     |
| 10.1250 | 558.122     |
| 11.1250 | 558.540     |
| 12.1250 | 558.590     |
| 13.1250 | 561.771     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS  | MEAN PRES | PEAK PRES |
|---------|-----------|-----------|
| 6.1270  | 19.0474   | 19.2444   |
| 7.1270  | 19.0474   | 19.2444   |
| 8.1270  | 19.0474   | 19.2444   |
| 9.1270  | 19.0474   | 19.2444   |
| 10.1270 | 19.0474   | 19.2444   |
| 11.1270 | 19.0474   | 19.2444   |
| 12.1270 | 19.0474   | 19.2444   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 6.1270  | 559.779     |
| 7.1270  | 559.041     |
| 8.1270  | 559.041     |
| 9.1270  | 559.041     |
| 10.1270 | 559.041     |
| 11.1270 | 559.041     |
| 12.1270 | 559.041     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.1270 | 1.382 |
| 8.1270 | 1.556 |
| 9.1270 | 4.292 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 13.9150  
 -8.0010 14.0930  
 -7.7510 14.2713  
 -7.5010 14.6127  
 -7.2510 15.3521  
 -7.0010 15.8979  
 -6.7510 16.2865  
 -6.5010 16.3933  
 -6.2510 16.6623  
 -6.0010 16.6385  
 -5.7510 17.0372  
 -5.5074 16.9020  
 -5.5190 16.9020

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8439 16.7681  
 -.5080 16.7681

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NHACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



TEST DATA PRINTOUT FOR POINT NO. 5

TEST POINT TITLE  
GAS CONSTANT  
AIR MASS FRACTION  
FLOWRATE  
ROTOR SPEED  
INLET TOTAL PRESSURE  
INLET TOTAL TEMPERATURE  
IN/T IN(STD)  
P IN/P IN(STD)

= 511251303060  
= 53.4935  
= .99228  
= 31.9229  
= 12145.3  
= 14.6944  
= 518.708  
= .95084  
= .93660

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 19.1754  |
| 5.3750 | 19.1028  |
| 5.6250 | 19.3409  |
| 5.8750 | 19.1834  |
| 6.1250 | 19.1213  |
| 6.3750 | 19.0626  |
| 6.6250 | 19.4092  |
| 6.8750 | 19.2128  |
| 7.1250 | 19.0808  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 558.230     |
| 5.3750 | 559.613     |
| 5.6250 | 562.119     |
| 5.8750 | 562.187     |
| 6.1250 | 561.600     |
| 6.3750 | 564.716     |
| 6.6250 | 570.169     |
| 6.8750 | 576.121     |
| 7.1250 | 583.751     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 19.0258   | 19.2875   |
| 6.4660 | 19.2308   | 19.4365   |
| 6.8050 | 19.1633   | 19.4057   |
| 7.1440 | 19.0968   | 19.3503   |
| 7.4830 | 19.0623   | 19.3371   |
| 7.8220 | 19.0347   | 19.2892   |
| 8.1610 | 19.0184   | 19.2831   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 559.953     |
| 6.4660 | 562.273     |
| 6.8050 | 563.261     |
| 7.1440 | 565.343     |
| 7.4830 | 569.473     |
| 7.8220 | 574.239     |
| 8.1610 | 576.530     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.9220 | 1.479 |
| 7.1440 | 1.818 |
| 6.4660 | 4.369 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 13.9695  |
| -8.0010 | 14.1249  |
| -7.5010 | 14.3044  |
| -7.2510 | 14.6340  |
| -7.0010 | 15.3844  |
| -6.7510 | 15.9112  |
| -6.5010 | 16.3084  |
| -6.2510 | 16.4098  |
| -6.0010 | 16.7031  |
| -5.7510 | 16.6618  |
| -5.5010 | 17.0769  |
| -5.2510 | 16.828   |
| -5.0010 | 16.9828  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 16.8417  |
| -2.5088 | 16.8417  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |
| 8       | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |
| 11      | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |
| 12      | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |
| 13      | 0.0000   | 1.00000      | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |
| NJUMP   | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



# TEST DATA PRINIQUE FOR POINT NO. 9

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P INSTD)  
 = 511251103660  
 = 53.4939  
 = 31.3323  
 = 12.1414  
 = 14.6944  
 = 51.95150  
 = .93767

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 19.1819  |
| 5.5000 | 19.1169  |
| 5.8750 | 19.0334  |
| 6.2500 | 19.1396  |
| 6.6250 | 19.2590  |
| 7.0000 | 19.0711  |
| 7.3750 | 19.4228  |
| 7.7500 | 19.2369  |
| 8.1250 | 19.0765  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 558.103     |
| 5.5000 | 559.452     |
| 5.8750 | 562.569     |
| 6.2500 | 562.003     |
| 6.6250 | 561.505     |
| 7.0000 | 564.674     |
| 7.3750 | 571.634     |
| 7.7500 | 577.948     |
| 8.1250 | 585.274     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 19.0466   | 19.2800   |
| 6.4660 | 19.2192   | 19.4353   |
| 6.8050 | 19.1472   | 19.4096   |
| 7.1440 | 19.0491   | 19.3487   |
| 7.4830 | 19.0024   | 19.3256   |
| 7.8220 | 18.9917   | 19.3312   |
| 8.1610 | 19.0147   | 19.3211   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 559.822     |
| 6.4660 | 562.193     |
| 6.8050 | 563.493     |
| 7.1440 | 565.892     |
| 7.4830 | 570.025     |
| 7.8220 | 574.560     |
| 8.1610 | 577.048     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | .266  |
| 7.1440 | 2.191 |
| 6.4660 | 4.493 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 14.0282  
 -8.0010 14.1478  
 -7.7510 14.3389  
 -7.5010 14.6438  
 -7.2510 15.3957  
 -7.0010 15.9031  
 -6.7510 16.2959  
 -6.5010 16.3830  
 -6.2510 16.7287  
 -6.0010 16.6616  
 -5.7510 17.1017  
 -5.5674 17.0378  
 -5.5190 17.0378

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499 16.8915  
 -.5080 16.8915

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. TIE BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000            |
| 2       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000            |
| 3       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000            |
| 4       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000            |
| 5       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000            |
| 6       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000            |
| 7       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000            |
| 8       | .1000    | .5000        | -0.0000             | -0.0000      | -0.0000            |
| 9       | 0.0000   | .5000        | -0.0000             | -0.0000      | -0.0000            |
| 10      | 0.0000   | .5000        | -0.0000             | -0.0000      | -0.0000            |
| 11      | .0500    | 1.0000       | -0.0000             | -0.0000      | -0.0000            |
| 12      | .0500    | 1.0000       | -0.0000             | -0.0000      | -0.0000            |
| 13      | .0500    | 1.0000       | -0.0000             | -0.0000      | -0.0000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0  
 NJUMP= 0



TEST DATA PRINTOUT FOR POINT NO. 7

TEST POINT TITLE  
GAS CONSTANT  
ATM MASS FRACTION  
FLOW RATE  
ROTOR SPEED  
INLET TOTAL PRESSURE  
INLET TOTAL TEMPERATURE  
P IN/1 IN(SID)  
P IN/0 IN(SID)

= 511251234060  
= 53.4922  
= 99.922  
= 30.1370  
= 12.1194  
= 14.1944  
= 51.8037  
= .93  
=

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 19.1790  |
| 5.2500 | 19.1167  |
| 5.3750 | 19.0544  |
| 5.5000 | 19.0525  |
| 5.6250 | 19.0506  |
| 5.7500 | 19.0487  |
| 5.8750 | 19.0468  |
| 6.0000 | 19.0449  |
| 6.1250 | 19.0430  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 55.8131     |
| 5.2500 | 55.8131     |
| 5.3750 | 55.8131     |
| 5.5000 | 55.8131     |
| 5.6250 | 55.8131     |
| 5.7500 | 55.8131     |
| 5.8750 | 55.8131     |
| 6.0000 | 55.8131     |
| 6.1250 | 55.8131     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1250 | 19.0270   | 19.2393   |
| 6.4000 | 19.1300   | 19.3423   |
| 6.6750 | 19.2330   | 19.4453   |
| 6.9500 | 19.3360   | 19.5483   |
| 7.2250 | 19.4390   | 19.6513   |
| 7.5000 | 19.5420   | 19.7543   |
| 7.7750 | 19.6450   | 19.8573   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1250 | 56.0115     |
| 6.4000 | 56.0115     |
| 6.6750 | 56.0115     |
| 6.9500 | 56.0115     |
| 7.2250 | 56.0115     |
| 7.5000 | 56.0115     |
| 7.7750 | 56.0115     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0220 | 2.151 |
| 7.1440 | 2.331 |
| 7.2660 | 2.511 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 14.0811  |
| -8.0010 | 14.1654  |
| -7.7510 | 14.3726  |
| -7.5010 | 14.6442  |
| -7.2510 | 15.3835  |
| -7.0010 | 15.8612  |
| -6.7510 | 16.2448  |
| -6.5010 | 16.3268  |
| -6.2510 | 16.7107  |
| -6.0010 | 16.6310  |
| -5.7510 | 17.0980  |
| -5.5010 | 17.0538  |
| -5.2510 | 17.0538  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 16.9034  |
| -2.5080 | 16.9034  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. TIME BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|---------------------|
| 1       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000              |
| 2       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000              |
| 3       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000              |
| 4       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000              |
| 5       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000              |
| 6       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000              |
| 7       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000              |
| 8       | 0.1000   | .5000        | -0.000              | -0.000       | -0.000              |
| 9       | 0.0000   | .5000        | -0.000              | -0.000       | -0.000              |
| 10      | 0.0000   | .5000        | -0.000              | -0.000       | -0.000              |
| 11      | .0500    | 1.0000       | -0.000              | -0.000       | -0.000              |
| 12      | .0500    | 1.0000       | -0.000              | -0.000       | -0.000              |
| 13      | .0500    | 1.0000       | -0.000              | -0.000       | -0.000              |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |

NJUMP= 0



70% SPEEDLINE PHASE II INPUT DATA







EX-106 & AL L. 1312725 & 1-631515

7452  
 7453

STATION 9 SECTION 4 - POLES + PILES

[illegible]

STATION 10 SPECIFIC BY - POLICE

| Year | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 |      |

61-1100-4501-1011815

[illegible]

STATION 21 OCT 1965 10 46 AM

4152 4153

5.10.1940 ? At 6.34.22 PM ET 16.11.1945

6640-0  
6640-0  
A.A.X

6640-0  
6640-0  
B.B.Y

# STAFF CALCULATION AND JUDICIAL DATA

[illegible]







ROTOR GENERALIZED PERFORMANCE LOSS 2PTS DEVIATION 2PTS

M-COORD LOSS COEFF/TOTAL LOSS COEFF

0.0000  
1.0000

OUTLET RADIUS = 0.0000

M-COORD DEVIATION ANGLE (DEGREES)

0.0000  
1.0000

STATOR GENERALIZED PERFORMANCE LOSS 2PTS DEVIATION 2PTS

M-COORD LOSS COEFF/TOTAL LOSS COEFF

0.0000  
1.0000

OUTLET RADIUS = 0.0000

M-COORD DEVIATION ANGLE (DEGREES)

0.0000  
1.0000

NUMBER OF TEST POINTS TO BE ANALYSED = 7

PSCALE= 0.00 PLOWR= 0.00 OAMPF= 7.000 NSAVE= 1

NMAX= 0 MFORCE= 0 NEX= 2



TEST DATA PRINQUI F04 POINT NO. 1

TEST POINT TITLE  
GAS CONSTANT  
ATMOSPHERIC FRACTION  
FLOW RATE  
ROTOR SPEED  
INLET TOTAL PRESSURE  
INLET TOTAL TEMPERATURE  
P IN/P IN (S)  
P IN/P IN (S)

= 511260170070  
= 53.4650  
= .99646  
= 41.3256  
= 1475.1  
= 14.6944  
= 516.708  
= .95163  
= .92145

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 20.1843  |
| 5.1250 | 20.1923  |
| 5.1250 | 20.1591  |
| 5.1250 | 20.1317  |
| 5.1250 | 20.1164  |
| 5.1250 | 20.1763  |
| 5.1250 | 20.2593  |
| 5.1250 | 20.2324  |
| 5.1250 | 20.2716  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 573.054     |
| 5.1250 | 574.203     |
| 5.1250 | 577.520     |
| 5.1250 | 575.320     |
| 5.1250 | 576.574     |
| 5.1250 | 576.237     |
| 5.1250 | 578.232     |
| 5.1250 | 585.902     |
| 5.1250 | 595.953     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 20.7336   | 21.0952   |
| 6.1270 | 21.0143   | 21.2436   |
| 6.1270 | 21.2405   | 21.4220   |
| 6.1270 | 21.0233   | 21.2226   |
| 6.1270 | 21.0804   | 21.3085   |
| 6.1270 | 20.8445   | 21.2314   |
| 6.1270 | 20.5631   | 20.7609   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 574.571     |
| 6.1270 | 575.314     |
| 6.1270 | 577.495     |
| 6.1270 | 574.653     |
| 6.1270 | 582.903     |
| 6.1270 | 587.573     |
| 6.1270 | 590.774     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0220 | 1.829 |
| 7.1520 | 1.731 |
| 6.4560 | 1.747 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 13.2455  |
| -8.9010 | 13.5958  |
| -7.7510 | 13.9173  |
| -7.5010 | 14.3943  |
| -7.2510 | 15.5444  |
| -7.0010 | 16.2738  |
| -6.7510 | 16.8061  |
| -6.5010 | 16.8979  |
| -6.2510 | 17.2876  |
| -6.0010 | 17.3207  |
| -5.7510 | 17.7809  |
| -5.5674 | 17.3483  |
| -5.5190 | 17.3483  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 17.1538  |
| -5.5030 | 17.1538  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TIE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000             |

# SOLUTION TYPE INDICATORS

| SOLUTION TYPE | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| STATION       | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |
| NMACH         | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 2

TEST POINT TYPE

GAS CONSTANT  
AIR MASS FRACTION  
FLOW RATE  
ROTOR SPEED  
INLET TOTAL PRESSURE  
INLET TOTAL TEMPERATURE  
P IN/P IN/STO  
P IN/P IN/STO

= 5112602J0270  
= 53.4659  
= 49.9644  
= 40.2509  
= 14.1687  
= 14.6944  
= 518.708  
= 19.5111  
= .92377

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 21.0347  |
| 5.6750 | 20.9401  |
| 6.2250 | 21.2291  |
| 6.7750 | 21.0072  |
| 7.3250 | 21.2595  |
| 7.8750 | 20.9321  |
| 8.4250 | 21.3424  |
| 8.9750 | 21.3995  |
| 9.5250 | 20.9603  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 573.419     |
| 5.6750 | 574.733     |
| 6.2250 | 574.429     |
| 6.7750 | 574.002     |
| 7.3250 | 574.171     |
| 7.8750 | 574.112     |
| 8.4250 | 574.333     |
| 8.9750 | 574.333     |
| 9.5250 | 574.333     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 20.7035   | 21.1225   |
| 6.4260 | 20.7035   | 21.1225   |
| 6.7250 | 20.7035   | 21.1225   |
| 7.0240 | 20.7035   | 21.1225   |
| 7.3230 | 20.7035   | 21.1225   |
| 7.6220 | 20.7035   | 21.1225   |
| 7.9210 | 20.7035   | 21.1225   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 575.153     |
| 6.4260 | 575.153     |
| 6.7250 | 575.153     |
| 7.0240 | 575.153     |
| 7.3230 | 575.153     |
| 7.6220 | 575.153     |
| 7.9210 | 575.153     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.9220 | 1.074 |
| 7.1140 | 1.547 |
| 6.4560 | 3.957 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 13.3635  
 -8.0010 13.7005  
 -7.7510 14.0109  
 -7.5010 14.5054  
 -7.2510 15.5802  
 -7.0010 16.4631  
 -6.7510 16.3705  
 -6.5010 17.0315  
 -6.2510 17.4403  
 -6.0010 17.4375  
 -5.7510 17.3884  
 -5.5010 17.6385  
 -5.2510 17.6385  
 -5.0010 17.6385

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.6499 17.4580  
 -5.080 17.4580

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. T. BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 3

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN (30)

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)  
 RADIUS  
 PRESSURE  
 ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)  
 RADIUS  
 TEMPERATURE  
 STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)  
 RADIUS  
 MEAN PRES  
 PEAK PRES  
 STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)  
 RADIUS  
 TEMPERATURE  
 STAGE OUTLET FLOW ANGLES ( 3 POINTS)  
 RADIUS  
 ANGLE

53.9567  
 39.2535  
 14.1642  
 51.9748  
 .92260

21.9934  
 21.9934  
 21.9934  
 21.9934  
 21.9934  
 21.9934  
 21.9934

573.253  
 573.253  
 573.253  
 573.253  
 573.253  
 573.253  
 573.253

21.1501  
 21.1501  
 21.1501  
 21.1501  
 21.1501  
 21.1501  
 21.1501

575.097  
 575.097  
 575.097  
 575.097  
 575.097  
 575.097  
 575.097

7.0220  
 7.1400  
 6.6500



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 13.4287  |
| -8.0010 | 13.7716  |
| -7.7510 | 14.0654  |
| -7.5010 | 14.5941  |
| -7.2510 | 15.6023  |
| -7.0010 | 16.5373  |
| -6.7510 | 17.0358  |
| -6.5010 | 17.0990  |
| -6.2510 | 17.5119  |
| -6.0010 | 17.4982  |
| -5.7510 | 17.9515  |
| -5.5010 | 17.7823  |
| -5.2510 | 17.7855  |

# MU3 STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8433 | 17.6061  |
| -2.5080 | 17.6061  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 4

TEST POINT TITLE  
GAS CONSTANT  
AIR MASS FRACTION  
FLOW RATE  
ROTOR SPEED  
INLET TOTAL PRESSURE  
INLET TOTAL TEMPERATURE  
P IN/P IN (STD)

= 511260402070  
= 53.4663  
= 0.99642  
= 39.11442  
= 14.11843  
= 14.6944  
= 51.8708  
= 1.95119  
= .92561

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS  | PRESSURE |
|---------|----------|
| 5.1250  | 21.1871  |
| 6.1250  | 21.1901  |
| 7.1250  | 21.1899  |
| 8.1250  | 21.1897  |
| 9.1250  | 21.1891  |
| 10.1250 | 21.1887  |
| 11.1250 | 21.1824  |
| 12.1250 | 21.1635  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 5.1250  | 571.503     |
| 6.1250  | 571.493     |
| 7.1250  | 571.494     |
| 8.1250  | 571.494     |
| 9.1250  | 571.493     |
| 10.1250 | 571.492     |
| 11.1250 | 571.491     |
| 12.1250 | 571.490     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS  | MEAN PRES | PEAK PRES |
|---------|-----------|-----------|
| 6.1250  | 20.8127   | 21.1670   |
| 7.1250  | 21.1134   | 21.1604   |
| 8.1250  | 21.1027   | 21.1528   |
| 9.1250  | 21.1003   | 21.1452   |
| 10.1250 | 21.0989   | 21.1376   |
| 11.1250 | 20.8858   | 21.1048   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 6.1250  | 575.559     |
| 7.1250  | 578.025     |
| 8.1250  | 579.045     |
| 9.1250  | 581.466     |
| 10.1250 | 586.112     |
| 11.1250 | 593.000     |
| 12.1250 | 596.559     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | 1.339 |
| 7.1250 | 1.368 |
| 6.4360 | 4.030 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 13.4815  |
| -8.0010 | 13.8239  |
| -7.7510 | 14.1095  |
| -7.5010 | 14.7151  |
| -7.2510 | 15.8756  |
| -7.0010 | 16.5881  |
| -6.7510 | 17.0636  |
| -6.5010 | 17.1317  |
| -6.2510 | 17.5520  |
| -6.0010 | 17.5080  |
| -5.7510 | 17.9828  |
| -5.5010 | 17.8888  |
| -5.2510 | 17.8888  |
| -5.0010 | 17.8888  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 17.7071  |
| -2.5088 | 17.7071  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TEE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NHACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |
| NJUMP=  | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



# TEST DATA PRINTOUT FOR POINT NO. 5

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN(S10)  
 P IN/P IN(S13)

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 21.1009  |
| 5.1500 | 20.9567  |
| 5.1750 | 21.1175  |
| 5.2000 | 21.1140  |
| 5.2250 | 21.1295  |
| 5.2500 | 21.0183  |
| 7.1750 | 21.5060  |
| 7.2000 | 21.1822  |
| 8.1250 | 21.1890  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 573.289     |
| 5.1500 | 573.057     |
| 5.1750 | 578.821     |
| 5.2000 | 578.204     |
| 5.2250 | 577.719     |
| 5.2500 | 584.393     |
| 7.1750 | 581.335     |
| 7.2000 | 593.535     |
| 8.1250 | 606.335     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 20.8478   | 21.1689   |
| 6.1560 | 21.1240   | 21.4216   |
| 6.1850 | 21.1837   | 21.4316   |
| 7.1430 | 21.1020   | 21.4174   |
| 7.1830 | 21.0286   | 21.4192   |
| 7.2220 | 20.8667   | 21.2869   |
| 8.1610 | 20.6952   | 21.1831   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 575.272     |
| 6.1560 | 578.042     |
| 6.1850 | 579.975     |
| 7.1430 | 581.295     |
| 7.1830 | 586.594     |
| 7.2220 | 593.433     |
| 8.1610 | 597.289     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0220 | 1.449 |
| 7.1990 | 1.876 |
| 6.1650 | 4.120 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD. | PRESSURE |
|----------|----------|
| -8.7510  | 13.5437  |
| -8.0010  | 13.8794  |
| -7.7510  | 14.1585  |
| -7.5010  | 14.7982  |
| -7.2510  | 15.9244  |
| -7.0010  | 16.5963  |
| -6.7510  | 17.1379  |
| -6.5010  | 17.5560  |
| -6.2510  | 17.5135  |
| -6.0010  | 19.0113  |
| -5.7510  | 17.9740  |
| -5.5010  | 17.9740  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 17.7852  |
| -2.5980 | 17.7852  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | Y12 ADJ. DEVIATION | DIST. FACTOR | FRAC. ICE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 2       | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 3       | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 4       | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 5       | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 6       | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 7       | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 8       | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 9       | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 10      | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 11      | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 12      | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 13      | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |
| NJUMP   | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



TEST DATA PRINTOUT FOR POINT NO. 6

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 ROTOR TOTAL PRESSURE  
 ROTOR TOTAL TEMPERATURE  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 INLET ANGLE  
 INLET ANGLE

511260603170  
 53.4569  
 37.9904  
 14.1657  
 14.1657  
 51.8700  
 51.8700  
 51.8700  
 51.8700  
 51.8700  
 51.8700

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 1.09996  |
| 5.2500 | 1.09996  |
| 5.3750 | 1.09996  |
| 5.5000 | 1.09996  |
| 5.6250 | 1.09996  |
| 5.7500 | 1.09996  |
| 5.8750 | 1.09996  |
| 6.0000 | 1.09996  |
| 6.1250 | 1.09996  |
| 6.2500 | 1.09996  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 523.0000    |
| 5.2500 | 523.0000    |
| 5.3750 | 523.0000    |
| 5.5000 | 523.0000    |
| 5.6250 | 523.0000    |
| 5.7500 | 523.0000    |
| 5.8750 | 523.0000    |
| 6.0000 | 523.0000    |
| 6.1250 | 523.0000    |
| 6.2500 | 523.0000    |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1250 | 1.09996   | 1.09996   |
| 6.2500 | 1.09996   | 1.09996   |
| 6.3750 | 1.09996   | 1.09996   |
| 6.5000 | 1.09996   | 1.09996   |
| 6.6250 | 1.09996   | 1.09996   |
| 6.7500 | 1.09996   | 1.09996   |
| 6.8750 | 1.09996   | 1.09996   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1250 | 523.0000    |
| 6.2500 | 523.0000    |
| 6.3750 | 523.0000    |
| 6.5000 | 523.0000    |
| 6.6250 | 523.0000    |
| 6.7500 | 523.0000    |
| 6.8750 | 523.0000    |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 6.1250 | 151   |
| 6.2500 | 151   |
| 6.3750 | 151   |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 13.6124  |
| -8.0010 | 13.9229  |
| -7.7510 | 14.2033  |
| -7.5010 | 14.8319  |
| -7.2510 | 15.9252  |
| -7.0010 | 16.0421  |
| -6.7510 | 17.1439  |
| -6.5010 | 17.3495  |
| -6.2510 | 17.4957  |
| -6.0010 | 18.0257  |
| -5.7510 | 18.0376  |
| -5.5130 | 18.0376  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8433 | 17.8435  |
| -2.5080 | 17.8435  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. DEVIATION | DIST. FACTOR | FRAC. IE BLOCKAGE |
|---------|----------|--------------|----------------|--------------|-------------------|
| 1       | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |
| 2       | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |
| 3       | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |
| 4       | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |
| 5       | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |
| 6       | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |
| 7       | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |
| 8       | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |
| 9       | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |
| 10      | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |
| 11      | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |
| 12      | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |
| 13      | 0.0000   | 1.00000      | -0.000         | 0.0000       | -0.0000           |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |
| NJUMP   | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



TEST DATA PRINTOUT FOR POINT NO. 7

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 T IN/1 IN(STD)  
 P IN/P IN(STD)

= 511260703573  
 = 53.4673  
 = 37.99639  
 = 37.3722  
 = 14157.0  
 = 14.6944  
 = 518.708  
 = .92868  
 = .92927

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 21.0731  |
| 5.3750 | 20.9573  |
| 5.6250 | 21.2824  |
| 5.8750 | 21.0731  |
| 6.1250 | 21.2824  |
| 6.3750 | 20.9573  |
| 6.6250 | 21.0731  |
| 6.8750 | 21.2824  |
| 7.1250 | 21.0731  |
| 7.3750 | 21.2824  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 573.371     |
| 5.3750 | 574.052     |
| 5.6250 | 575.030     |
| 5.8750 | 577.063     |
| 6.1250 | 581.231     |
| 6.3750 | 589.231     |
| 6.6250 | 596.165     |
| 6.8750 | 610.165     |
| 7.1250 | 610.165     |
| 7.3750 | 610.165     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1250 | 20.6056   | 21.1563   |
| 6.3750 | 20.9072   | 21.1563   |
| 6.6250 | 20.9072   | 21.1563   |
| 6.8750 | 20.8123   | 21.2824   |
| 7.1250 | 20.8123   | 21.1563   |
| 7.3750 | 20.8024   | 21.2824   |
| 7.6250 | 20.6369   | 21.2824   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1250 | 575.249     |
| 6.3750 | 576.002     |
| 6.6250 | 579.374     |
| 6.8750 | 582.302     |
| 7.1250 | 586.374     |
| 7.3750 | 590.374     |
| 7.6250 | 598.728     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0223 | 2.316 |
| 7.1543 | 2.364 |
| 6.6500 | 2.370 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 13.5345  |
| -9.0010 | 13.9607  |
| -7.7510 | 14.2309  |
| -7.5010 | 14.3699  |
| -7.0010 | 15.4687  |
| -6.7510 | 16.3756  |
| -6.5010 | 17.1464  |
| -6.2510 | 17.5085  |
| -6.0010 | 17.4429  |
| -5.7210 | 18.0239  |
| -5.5674 | 18.0559  |
| -5.5130 | 18.0663  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8439 | 17.9619  |
| -5.5980 | 17.3619  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | WLD ADJ. DEVIATION | DIST. FACTOR | FRAC. TIE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 11      | 0.0500   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 12      | 0.0500   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 13      | 0.0500   | 1.0000       | -0.000             | -0.000       | -0.000             |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NWACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |
| NJUMP=  | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



75% SPEEDLINE PHASE II INPUT DATA



FIXED DATA PRINTOUT

HTFC CONFIGURATION #1, 75% SPEED, ACROSS-PLANE ANALYSIS 23MAR76

| NUMBERS OF OPERATIONS PER PAGE | PERCENTAGE OF NUMBERS OF OPERATIONS PER PAGE |
|--------------------------------|----------------------------------------------|
| 1                              | 100                                          |
| 2                              | 100                                          |
| 3                              | 100                                          |
| 4                              | 100                                          |
| 5                              | 100                                          |
| 6                              | 100                                          |
| 7                              | 100                                          |
| 8                              | 100                                          |
| 9                              | 100                                          |
| 10                             | 100                                          |
| 11                             | 100                                          |
| 12                             | 100                                          |
| 13                             | 100                                          |
| 14                             | 100                                          |
| 15                             | 100                                          |
| 16                             | 100                                          |
| 17                             | 100                                          |
| 18                             | 100                                          |
| 19                             | 100                                          |
| 20                             | 100                                          |
| 21                             | 100                                          |
| 22                             | 100                                          |
| 23                             | 100                                          |
| 24                             | 100                                          |
| 25                             | 100                                          |
| 26                             | 100                                          |
| 27                             | 100                                          |
| 28                             | 100                                          |
| 29                             | 100                                          |
| 30                             | 100                                          |
| 31                             | 100                                          |
| 32                             | 100                                          |
| 33                             | 100                                          |
| 34                             | 100                                          |
| 35                             | 100                                          |
| 36                             | 100                                          |
| 37                             | 100                                          |
| 38                             | 100                                          |
| 39                             | 100                                          |
| 40                             | 100                                          |
| 41                             | 100                                          |
| 42                             | 100                                          |
| 43                             | 100                                          |
| 44                             | 100                                          |
| 45                             | 100                                          |
| 46                             | 100                                          |
| 47                             | 100                                          |
| 48                             | 100                                          |
| 49                             | 100                                          |
| 50                             | 100                                          |
| 51                             | 100                                          |
| 52                             | 100                                          |
| 53                             | 100                                          |
| 54                             | 100                                          |
| 55                             | 100                                          |
| 56                             | 100                                          |
| 57                             | 100                                          |
| 58                             | 100                                          |
| 59                             | 100                                          |
| 60                             | 100                                          |
| 61                             | 100                                          |
| 62                             | 100                                          |
| 63                             | 100                                          |
| 64                             | 100                                          |
| 65                             | 100                                          |
| 66                             | 100                                          |
| 67                             | 100                                          |
| 68                             | 100                                          |
| 69                             | 100                                          |
| 70                             | 100                                          |
| 71                             | 100                                          |
| 72                             | 100                                          |
| 73                             | 100                                          |
| 74                             | 100                                          |
| 75                             | 100                                          |
| 76                             | 100                                          |
| 77                             | 100                                          |
| 78                             | 100                                          |
| 79                             | 100                                          |
| 80                             | 100                                          |
| 81                             | 100                                          |
| 82                             | 100                                          |
| 83                             | 100                                          |
| 84                             | 100                                          |
| 85                             | 100                                          |
| 86                             | 100                                          |
| 87                             | 100                                          |
| 88                             | 100                                          |
| 89                             | 100                                          |
| 90                             | 100                                          |
| 91                             | 100                                          |
| 92                             | 100                                          |
| 93                             | 100                                          |
| 94                             | 100                                          |
| 95                             | 100                                          |
| 96                             | 100                                          |
| 97                             | 100                                          |
| 98                             | 100                                          |
| 99                             | 100                                          |
| 100                            | 100                                          |

#####  
1201 1201 1201 1201  
1201 1201 1201 1201

ANNULUS SPECIFICATION  
STATION 1 SPECIFIED BY 2 POINTS

|          |      |
|----------|------|
| 0006:37  | RSTN |
| 0008:09  |      |
| E057:9T- | RSTN |
| -16:450Z |      |

STATION 2 SPECIES 2 NOTED

|      |        |      |         |
|------|--------|------|---------|
| RSTW | 9.0000 | RSTM | -1.9800 |
|      | 9.6900 |      | -1.9800 |

STATION 3 SPECIFIED BY 2 POINTS

05:08 05:21-12:55 MSX

STATION 6 SPECIFIED BY 2 POINTS

| RSTN   | XSTM     |
|--------|----------|
| 1.5430 | -9.7563  |
| 0.5500 | -11.1380 |

STATION 5 SPEEDS 25 AND 20 MPH

| QST    | KST     |
|--------|---------|
| 2:0530 | -9:1137 |
| 3:5000 | -9:3693 |

STATION 6 SPECIES 9 POINTS 2

|         |        |
|---------|--------|
| 0659:6- | 0055:2 |
| 0055:6- |        |
| 1-15X   | 1-15B  |

SECTION 60106 9 26 CE1103245 1 NOV1915

|         |        |
|---------|--------|
| 5051-9- | 4000-3 |
| 4152    | 4152   |



# STATION 8 SPECIFIED BY 9 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.4512 | -5.3150 |
| 4.6000 | -5.3000 |
| 4.8000 | -5.2600 |
| 5.0000 | -5.1920 |
| 5.1954 | -5.1717 |
| 5.5592 | -5.2785 |
| 6.7943 | -5.3709 |
| 7.8661 | -5.6015 |
| 8.5000 | -5.7643 |

# STATION 9 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.5534 | -5.1700 |
| 5.2000 | -5.0000 |
| 5.8000 | -4.9500 |
| 6.5000 | -5.3500 |

# STATION 10 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.6435 | -5.0250 |
| 5.2500 | -4.7750 |
| 5.8200 | -4.6500 |
| 6.5000 | -4.3000 |

# STATION 11 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.6314 | -2.4999 |
| 6.5000 | -2.2176 |

# STATION 12 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.7906 | -0.9203 |
| 6.5000 | -0.9200 |

# STATION 13 SPECIFIED BY 2 POINTS

| RSTN   | XSTN   |
|--------|--------|
| 5.7305 | 0.0003 |
| 6.5000 | 0.0003 |

# STATION CALCULATION SPECIFICATION AND SLADING DATA

|           |           |            |          |
|-----------|-----------|------------|----------|
| STATION 2 | NCALC = 0 | NDATA = -0 | NBL = -0 |
| STATION 3 | NCALC = 0 | NDATA = -0 | NBL = -0 |
| STATION 4 | NCALC = 0 | NDATA = -0 | NBL = -0 |
| STATION 5 | NCALC = 0 | NDATA = -0 | NBL = -0 |
| STATION 6 | NCALC = 0 | NDATA = -0 | NBL = -0 |







ROTOR GENERALIZED PERFORMANCE    LOSS   2PTS    DEVIATION   2PTS

     M-COORD    LOSS COEFF/TOTAL LOSS COEFF

         0.0000           0.0000  
         1.0000           1.0000

OUTLET RADIUS = 0.0000

     M-COORD    DEVIATION ANGLE (DEGREES)

         0.0000           0.0000  
         1.0000           1.0000

STATOR GENERALIZED PERFORMANCE    LOSS   2PTS    DEVIATION   2PTS

     M-COORD    LOSS COEFF/TOTAL LOSS COEFF

         0.0000           0.0000  
         1.0000           1.0000

OUTLET RADIUS = 0.0000

     M-COORD    DEVIATION ANGLE (DEGREES)

         0.0000           0.0000  
         1.0000           1.0000

NUMBER OF TEST POINTS TO BE ANALYSED =    4

PSCALE= 0.00 PLOWR= 0.00 DAMPF= 7.000 NSAVE= 1

NMAX= 0 MFORCE= 0 NEX= 2



TEST DATA PRINTOUT FOR POINT NO. 1

TEST POINT TITLE  
GAS CONSTANT  
AIR FRACTION  
FLOW RATE  
ROTOR SPEED  
INLET TOTAL PRESSURE  
INLET TOTAL TEMPERATURE  
P IN/IN (STD)  
P IN/IN (STD)

691290130075  
53.4452  
5.99787  
45.503  
152.478  
14.6944  
518.208  
1.9025  
1.90470

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 0      | 2.167    |
| 1      | 2.177    |
| 2      | 2.177    |
| 3      | 2.177    |
| 4      | 2.177    |
| 5      | 2.177    |
| 6      | 2.177    |
| 7      | 2.177    |
| 8      | 2.177    |
| 9      | 2.177    |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0      | 553         |
| 1      | 553         |
| 2      | 553         |
| 3      | 553         |
| 4      | 553         |
| 5      | 553         |
| 6      | 553         |
| 7      | 553         |
| 8      | 553         |
| 9      | 553         |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 0      | 2.167     | 2.167     |
| 1      | 2.167     | 2.167     |
| 2      | 2.167     | 2.167     |
| 3      | 2.167     | 2.167     |
| 4      | 2.167     | 2.167     |
| 5      | 2.167     | 2.167     |
| 6      | 2.167     | 2.167     |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0      | 553         |
| 1      | 553         |
| 2      | 553         |
| 3      | 553         |
| 4      | 553         |
| 5      | 553         |
| 6      | 553         |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE  |
|--------|--------|
| 0      | -1.142 |
| 1      | 1.142  |
| 2      | 1.142  |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 13.4222  |
| -8.7510 | 13.1917  |
| -7.7510 | 14.2177  |
| -7.2510 | 15.0075  |
| -7.0310 | 15.1239  |
| -6.7510 | 16.1733  |
| -6.5010 | 16.1374  |
| -6.2510 | 17.2696  |
| -6.0310 | 17.6937  |
| -5.7510 | 17.7423  |
| -5.5010 | 17.4091  |
| -5.2510 | 17.3253  |
| -5.0310 | 17.9528  |

# HUA STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 17.7127  |
| -2.5000 | 17.7127  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADJ. DEVIATION | DIST. FACTOR | FRAC. T.E. BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|---------------------|
| 1       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 2       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 3       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 4       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 5       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 6       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 7       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 8       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 9       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 10      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 11      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 12      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 13      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |

# SOLUTION TYPE INDICATORS

| SOLUTION TYPE | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| STATION       | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
| NHACH         | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |

NJUMP= 0



# TEST DATA SUMMARY FOR POINT NO. 2

## TEST POINT TITLE

GAS CONSTANT  
AIR FRACTION  
FLOW RATE  
PLOT OF PRESSURE  
PLOT OF TEMPERATURE  
PLOT OF INLET PRESSURE  
PLOT OF INLET TEMPERATURE  
PLOT OF INLET INLET

601290200270

53.4750  
1.0000  
1.0000  
1.0000  
1.0000  
1.0000  
1.0000

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

RADIUS PRESSURE  
5.1250 22.2000  
5.1250 22.2000  
5.1250 22.2000  
5.1250 22.2000  
5.1250 22.2000  
5.1250 22.2000  
5.1250 22.2000

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

RADIUS TEMPERATURE  
5.1250 22.2000  
5.1250 22.2000  
5.1250 22.2000  
5.1250 22.2000  
5.1250 22.2000  
5.1250 22.2000  
5.1250 22.2000

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

RADIUS MEAN PRES PLAK PRES  
6.1270 22.2000  
6.1270 22.2000  
6.1270 22.2000  
6.1270 22.2000  
6.1270 22.2000  
6.1270 22.2000  
6.1270 22.2000

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

RADIUS TEMPERATURE  
6.1270 22.2000  
6.1270 22.2000  
6.1270 22.2000  
6.1270 22.2000  
6.1270 22.2000  
6.1270 22.2000  
6.1270 22.2000

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

RADIUS ANGLE  
7.0220 1.0000  
7.0220 1.0000  
7.0220 1.0000



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 12.3904  |
| -8.0010 | 13.4434  |
| -7.7510 | 14.2475  |
| -7.5010 | 14.9100  |
| -7.2510 | 15.1165  |
| -7.0010 | 15.7923  |
| -6.7510 | 17.3450  |
| -6.5010 | 17.4853  |
| -6.2510 | 17.9090  |
| -6.0010 | 17.9639  |
| -5.7510 | 18.5600  |
| -5.5674 | 18.2900  |
| -5.5190 |          |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 16.0662  |
| -5.0680 | 18.0665  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TIME BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|---------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000             |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |
| NJUMP   | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



TEST DATA PRINTOUT FOR POINT NO. 3

TEST POINT TITLE  
 GAS CONSTANT  
 FLOWMETER  
 ROTOR TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN (SI)  
 = 601293331275  
 = 53.99253  
 = 1526002  
 = 18.7733  
 = .90943

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 0.0    | 22.33333 |
| 1.0    | 22.33333 |
| 2.0    | 22.33333 |
| 3.0    | 22.33333 |
| 4.0    | 22.33333 |
| 5.0    | 22.33333 |
| 6.0    | 22.33333 |
| 7.0    | 22.33333 |
| 8.0    | 22.33333 |
| 9.0    | 22.33333 |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.0    | 61.41414    |
| 1.0    | 61.41414    |
| 2.0    | 61.41414    |
| 3.0    | 61.41414    |
| 4.0    | 61.41414    |
| 5.0    | 61.41414    |
| 6.0    | 61.41414    |
| 7.0    | 61.41414    |
| 8.0    | 61.41414    |
| 9.0    | 61.41414    |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 0.0    | 22.33333  | 22.33333  |
| 1.0    | 22.33333  | 22.33333  |
| 2.0    | 22.33333  | 22.33333  |
| 3.0    | 22.33333  | 22.33333  |
| 4.0    | 22.33333  | 22.33333  |
| 5.0    | 22.33333  | 22.33333  |
| 6.0    | 22.33333  | 22.33333  |
| 7.0    | 22.33333  | 22.33333  |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.0    | 61.41414    |
| 1.0    | 61.41414    |
| 2.0    | 61.41414    |
| 3.0    | 61.41414    |
| 4.0    | 61.41414    |
| 5.0    | 61.41414    |
| 6.0    | 61.41414    |
| 7.0    | 61.41414    |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 0.0    | 1.57  |
| 1.0    | 1.57  |
| 2.0    | 1.57  |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD  | PRESSURE |
|----------|----------|
| -8.75110 | 13.31    |
| -8.03110 | 13.341   |
| -7.75110 | 14.161   |
| -7.25110 | 14.161   |
| -7.03110 | 14.161   |
| -6.75110 | 14.161   |
| -6.53110 | 14.161   |
| -6.25110 | 14.161   |
| -5.75110 | 14.161   |
| -5.53110 | 14.161   |
| -5.25110 | 14.161   |

# HUR STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8473 | 19.1737  |
| -5.130  | 18.1717  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADJ. DEVIATION | DIST. FACTOR | FRAC. TO BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |
| 2       | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |
| 3       | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |
| 4       | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |
| 5       | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |
| 6       | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |
| 7       | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |
| 8       | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |
| 9       | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |
| 10      | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |
| 11      | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |
| 12      | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |
| 13      | 0.0000   | 1.0000       | 0.0000              | 0.0000       | 0.0000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---------|---|---|---|---|---|---|---|---|---|----|----|----|----|
| NMACH   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  |

NJUMP= 0



TEST DATA PRINTOUT FOR POINT NO.-----

TEST POINT TITLE  
GAS CONSTANT  
AIR MASS FRACTION  
FLOW RATE  
ROTOR SPEED  
INLET TOTAL PRESSURE  
INLET TOTAL TEMPERATURE  
P INLET INCHES  
P INLET INCHES

601290631875  
51.4457  
9.706  
2.8112  
12.888  
51.894  
51.894  
9.1106

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 1.250  | 22.2717  |
| 1.250  | 22.2717  |
| 1.250  | 22.2717  |
| 1.250  | 22.2717  |
| 1.250  | 22.2717  |
| 1.250  | 22.2717  |
| 1.250  | 22.2717  |
| 1.250  | 22.2717  |
| 1.250  | 22.2717  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 1.250  | 601.702     |
| 1.250  | 601.702     |
| 1.250  | 601.702     |
| 1.250  | 601.702     |
| 1.250  | 601.702     |
| 1.250  | 601.702     |
| 1.250  | 601.702     |
| 1.250  | 601.702     |
| 1.250  | 601.702     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 1.250  | 22.2717   | 22.2717   |
| 1.250  | 22.2717   | 22.2717   |
| 1.250  | 22.2717   | 22.2717   |
| 1.250  | 22.2717   | 22.2717   |
| 1.250  | 22.2717   | 22.2717   |
| 1.250  | 22.2717   | 22.2717   |
| 1.250  | 22.2717   | 22.2717   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 1.250  | 601.702     |
| 1.250  | 601.702     |
| 1.250  | 601.702     |
| 1.250  | 601.702     |
| 1.250  | 601.702     |
| 1.250  | 601.702     |
| 1.250  | 601.702     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE  |
|--------|--------|
| 1.250  | 2.8112 |
| 1.250  | 2.8112 |
| 1.250  | 2.8112 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 13.1812  
 -8.0010 13.6094  
 -7.7510 14.0326  
 -7.5010 14.4433  
 -7.2510 15.8115  
 -7.0010 16.5864  
 -6.7510 17.2933  
 -6.5010 17.5370  
 -6.2510 18.0765  
 -6.0010 17.9504  
 -5.7510 18.6783  
 -2.5674 18.5024  
 -.5130 18.5024

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499 18.2813  
 -.5080 18.2813

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MTD ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NYACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



80% SPEEDLINE PHASE II INPUT DATA



PROGRAM U00200 - AXIAL COMPRESSOR TEST DATA ANALYSIS  
FIXED DATA PRINTOUT

HTFC CONFIGURATION #1, 80% SPEED, ACROSS-BLADE ANALYSIS, 24MAR76

NUMBER OF STATIONS 13  
NUMBER OF STAGES 12  
NUMBER OF ITERATIONS 20  
MAXIMUM NUMBER OF ARBITRARY ITERATIONS 20  
TOTAL PRESSURE SOURCE INDICATOR 1  
TOTAL TEMPERATURE SOURCE INDICATOR 1  
STATION NUMBER FOR ROTOR EXIT DATA 10  
STATION NUMBER FOR STATOR EXIT DATA 12  
NUMBER OF ROTOR BLADES 20  
NUMBER OF STATOR BLADES 20  
MAXIMUM NUMBER OF LINES PER PAGE 31  
MPLOT 3

ANNULUS SPECIFICATION

STATION 1 SPECIFIED BY 2 POINTS

RSTN XSTN

0.0000 -18.4500  
13.3000 -18.4500

STATION 2 SPECIFIED BY 2 POINTS

RSTN XSTN

0.0000 -14.9000  
9.4800 -14.0506

STATION 3 SPECIFIED BY 2 POINTS

RSTN XSTN

0.0000 -10.6500  
8.9600 -12.8508

STATION 4 SPECIFIED BY 2 POINTS

RSTN XSTN

1.5400 -9.7583  
8.5500 -11.1380

STATION 5 SPECIFIED BY 2 POINTS

RSTN XSTN

2.0550 -8.1137  
8.5000 -9.6493

STATION 6 SPECIFIED BY 2 POINTS

RSTN XSTN

2.3500 -8.6500  
8.5000 -8.6500

STATION 7 SPECIFIED BY 6 POINTS

RSTN XSTN

2.6314 -8.1600  
3.8058 -8.2045  
5.0537 -8.2603  
6.3919 -8.1810  
7.7851 -7.9615  
8.5000 -7.8110



# STATION 8 SPECIFIED BY 3 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.4612 | -5.3150 |
| 4.6090 | -5.3380 |
| 4.8900 | -5.2660 |
| 5.0000 | -5.1890 |
| 5.1004 | -5.1717 |
| 5.1532 | -5.2485 |
| 5.7945 | -5.3708 |
| 7.9501 | -5.6015 |
| 8.5000 | -5.7870 |

# STATION 9 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.5534 | -5.1700 |
| 5.2000 | -5.3000 |
| 5.3000 | -4.9500 |
| 8.5000 | -5.3500 |

# STATION 10 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.6435 | -5.0250 |
| 5.2500 | -4.7750 |
| 5.8200 | -4.6500 |
| 8.5000 | -4.3000 |

# STATION 11 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.6314 | -2.4999 |
| 8.5000 | -2.2174 |

# STATION 12 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.7906 | -0.9200 |
| 8.5000 | -0.9200 |

# STATION 13 SPECIFIED BY 2 POINTS

| RSTN   | XSTN   |
|--------|--------|
| 5.7906 | 0.0000 |
| 8.5000 | 0.0000 |

# STATION CALCULATION SPECIFICATION AND BLADING DATA

|           |           |            |          |
|-----------|-----------|------------|----------|
| STATION 2 | NCALC = 0 | NDATA = -0 | NBL = -0 |
| STATION 3 | NCALC = 0 | NDATA = -0 | NBL = -0 |
| STATION 4 | NCALC = 0 | NDATA = -0 | NBL = -0 |
| STATION 5 | NCALC = 0 | NDATA = -0 | NBL = -0 |
| STATION 6 | NCALC = 0 | NDATA = -0 | NBL = -0 |







ROTOR GENERALIZED PERFORMANCE    LOSS   2PTS    DEVIATION   2PTS  
     M-COORD   LOSS COEFF/TOTAL LOSS COEFF  
         0.0000           0.0000  
         1.0000           1.0000  
 OUTLET RADIUS = 0.0000  
     M-COORD   DEVIATION ANGLE (DEGREES)  
         0.0000           0.0000  
         1.0000           1.0000  
 STATOR GENERALIZED PERFORMANCE    LOSS   2PTS    DEVIATION   2PTS  
     M-COORD   LOSS COEFF/TOTAL LOSS COEFF  
         0.0000           0.0000  
         1.0000           1.0000  
 OUTLET RADIUS = 0.0000  
     M-COORD   DEVIATION ANGLE (DEGREES)  
         0.0000           0.0000  
         1.0000           1.0000  
 NUMBER OF TEST POINTS TO BE ANALYSED =    4  
 PSCALE= 0.00 PLOWER= 3.00 DAMPF= 7.000 NSAVE= 1  
 NMAX=   0 MFORCL=   0 NEX= 2



# TEST DATA PRINTOUT FOR POINT NO. 1

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOWRATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/T IN(STD)  
 P IN/P IN(STD)

512050100290  
 53.5265  
 7.99457  
 47.7049  
 16.180.8  
 14.6944  
 518.708  
 .99410  
 .90736

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 23.4273  |
| 5.5000 | 23.0623  |
| 5.8750 | 23.6392  |
| 6.2500 | 23.4541  |
| 6.6250 | 23.8436  |
| 7.0000 | 23.1900  |
| 7.3750 | 23.8453  |
| 7.7500 | 23.3166  |
| 8.1250 | 24.1692  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 590.842     |
| 5.5000 | 592.434     |
| 5.8750 | 590.403     |
| 6.2500 | 597.072     |
| 6.6250 | 594.034     |
| 7.0000 | 600.180     |
| 7.3750 | 599.652     |
| 7.7500 | 604.036     |
| 8.1250 | 622.425     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1250 | 23.9168   | 23.4307   |
| 6.4660 | 23.3133   | 23.7153   |
| 6.8050 | 23.2736   | 23.9999   |
| 7.1440 | 23.3930   | 23.7673   |
| 7.4830 | 23.4631   | 23.8147   |
| 7.8220 | 23.6071   | 23.8312   |
| 8.1610 | 23.6421   | 24.0165   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1250 | 592.573     |
| 6.4660 | 592.430     |
| 6.8050 | 596.532     |
| 7.1440 | 599.562     |
| 7.4830 | 601.593     |
| 7.8220 | 608.274     |
| 8.1610 | 614.862     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | 1.965 |
| 7.1440 | 1.930 |
| 6.4660 | 3.327 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510  
 -8.0010  
 -7.7510  
 -7.5010  
 -7.2510  
 -7.0010  
 -6.7510  
 -6.5010  
 -6.2510  
 -6.0010  
 -5.7510  
 -5.5010  
 -5.2510  
 -5.0010

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499  
 -2.5080  
 18.7256  
 18.7255

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. TIME BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|---------------------|
| 1       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 2       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 3       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 4       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 5       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 6       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 7       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 8       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 9       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 10      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 11      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 12      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 13      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



TEST DATA DZ117J1 F04 2014T 10. 2

|     |             |
|-----|-------------|
| 5   | 12450210090 |
| =   |             |
| 7   | 12450210090 |
| =   |             |
| 9   | 12450210090 |
| =   |             |
| 11  | 12450210090 |
| =   |             |
| 13  | 12450210090 |
| =   |             |
| 15  | 12450210090 |
| =   |             |
| 17  | 12450210090 |
| =   |             |
| 19  | 12450210090 |
| =   |             |
| 21  | 12450210090 |
| =   |             |
| 23  | 12450210090 |
| =   |             |
| 25  | 12450210090 |
| =   |             |
| 27  | 12450210090 |
| =   |             |
| 29  | 12450210090 |
| =   |             |
| 31  | 12450210090 |
| =   |             |
| 33  | 12450210090 |
| =   |             |
| 35  | 12450210090 |
| =   |             |
| 37  | 12450210090 |
| =   |             |
| 39  | 12450210090 |
| =   |             |
| 41  | 12450210090 |
| =   |             |
| 43  | 12450210090 |
| =   |             |
| 45  | 12450210090 |
| =   |             |
| 47  | 12450210090 |
| =   |             |
| 49  | 12450210090 |
| =   |             |
| 51  | 12450210090 |
| =   |             |
| 53  | 12450210090 |
| =   |             |
| 55  | 12450210090 |
| =   |             |
| 57  | 12450210090 |
| =   |             |
| 59  | 12450210090 |
| =   |             |
| 61  | 12450210090 |
| =   |             |
| 63  | 12450210090 |
| =   |             |
| 65  | 12450210090 |
| =   |             |
| 67  | 12450210090 |
| =   |             |
| 69  | 12450210090 |
| =   |             |
| 71  | 12450210090 |
| =   |             |
| 73  | 12450210090 |
| =   |             |
| 75  | 12450210090 |
| =   |             |
| 77  | 12450210090 |
| =   |             |
| 79  | 12450210090 |
| =   |             |
| 81  | 12450210090 |
| =   |             |
| 83  | 12450210090 |
| =   |             |
| 85  | 12450210090 |
| =   |             |
| 87  | 12450210090 |
| =   |             |
| 89  | 12450210090 |
| =   |             |
| 91  | 12450210090 |
| =   |             |
| 93  | 12450210090 |
| =   |             |
| 95  | 12450210090 |
| =   |             |
| 97  | 12450210090 |
| =   |             |
| 99  | 12450210090 |
| =   |             |
| 101 | 12450210090 |
| =   |             |
| 103 | 12450210090 |
| =   |             |
| 105 | 12450210090 |
| =   |             |
| 107 | 12450210090 |
| =   |             |
| 109 | 12450210090 |
| =   |             |
| 111 | 12450210090 |
| =   |             |
| 113 | 12450210090 |
| =   |             |
| 115 | 12450210090 |
| =   |             |
| 117 | 12450210090 |
| =   |             |
| 119 | 12450210090 |
| =   |             |
| 121 | 12450210090 |
| =   |             |
| 123 | 12450210090 |
| =   |             |
| 125 | 12450210090 |
| =   |             |
| 127 | 12450210090 |
| =   |             |
| 129 | 12450210090 |
| =   |             |
| 131 | 12450210090 |
| =   |             |
| 133 | 12450210090 |
| =   |             |
| 135 | 12450210090 |
| =   |             |
| 137 | 12450210090 |
| =   |             |
| 139 | 12450210090 |
| =   |             |
| 141 | 12450210090 |
| =   |             |
| 143 | 12450210090 |
| =   |             |
| 145 | 12450210090 |
| =   |             |
| 147 | 12450210090 |
| =   |             |
| 149 | 12450210090 |
| =   |             |
| 151 | 12450210090 |
| =   |             |
| 153 | 12450210090 |
| =   |             |
| 155 | 12450210090 |
| =   |             |
| 157 | 12450210090 |
| =   |             |
| 159 | 12450210090 |
| =   |             |
| 161 | 12450210090 |
| =   |             |
| 163 | 12450210090 |
| =   |             |
| 165 | 12450210090 |
| =   |             |
| 167 |             |

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

[illegible]

ROTOR OUTLET TOTAL TEMPERATURE ( ° F ) ( ° C )

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 590.542     |
| 5.5750 | 592.278     |
| 6.0250 | 593.137     |
| 6.4750 | 593.733     |
| 6.9250 | 594.175     |
| 7.3750 | 594.592     |
| 7.8250 | 594.938     |
| 8.2750 | 595.219     |

STAGE OUTLET TOTAL PRESSURES (7 PLOTS)

| RADIUS  | TERM PYES  | PLAN PYES  |
|---------|------------|------------|
| 6.1270  | 2233333333 | 2222222222 |
| 6.5000  | 2233333333 | 2222222222 |
| 6.8730  | 2233333333 | 2222222222 |
| 7.2460  | 2233333333 | 2222222222 |
| 7.6190  | 2233333333 | 2222222222 |
| 7.9920  | 2233333333 | 2222222222 |
| 8.3650  | 2233333333 | 2222222222 |
| 8.7380  | 2233333333 | 2222222222 |
| 9.1110  | 2233333333 | 2222222222 |
| 9.4840  | 2233333333 | 2222222222 |
| 9.8570  | 2233333333 | 2222222222 |
| 10.2300 | 2233333333 | 2222222222 |
| 10.6030 | 2233333333 | 2222222222 |
| 10.9760 | 2233333333 | 2222222222 |
| 11.3490 | 2233333333 | 2222222222 |
| 11.7220 | 2233333333 | 2222222222 |
| 12.0950 | 2233333333 | 2222222222 |
| 12.4680 | 2233333333 | 2222222222 |
| 12.8410 | 2233333333 | 2222222222 |
| 13.2140 | 2233333333 | 2222222222 |
| 13.5870 | 2233333333 | 2222222222 |
| 13.9600 | 2233333333 | 2222222222 |
| 14.3330 | 2233333333 | 2222222222 |
| 14.7060 | 2233333333 | 2222222222 |
| 15.0790 | 2233333333 | 2222222222 |
| 15.4520 | 2233333333 | 2222222222 |
| 15.8250 | 2233333333 | 2222222222 |
| 16.1980 | 2233333333 | 2222222222 |
| 16.5710 | 2233333333 | 2222222222 |
| 16.9440 | 2233333333 | 2222222222 |
| 17.3170 | 2233333333 | 2222222222 |
| 17.6900 | 2233333333 | 2222222222 |
| 18.0630 | 2233333333 | 2222222222 |
| 18.4360 | 2233333333 | 2222222222 |
| 18.8090 | 2233333333 | 2222222222 |
| 19.1820 | 2233333333 | 2222222222 |
| 19.5550 | 2233333333 | 2222222222 |
| 19.9280 | 2233333333 | 2222222222 |
| 20.3010 | 2233333333 | 2222222222 |
| 20.6740 | 2233333333 | 2222222222 |
| 21.0470 | 2233333333 | 2222222222 |
| 21.4200 | 2233333333 | 2222222222 |
| 21.7930 | 2233333333 | 2222222222 |
| 22.1660 | 2233333333 | 2222222222 |
| 22.5390 | 2233333333 | 2222222222 |
| 22.9120 | 2233333333 | 2222222222 |
| 23.2850 | 2233333333 | 2222222222 |
| 23.6580 | 2233333333 | 2222222222 |
| 24.0310 | 2233333333 | 2222222222 |
| 24.4040 | 2233333333 | 2222222222 |
| 24.7770 | 2233333333 | 2222222222 |
| 25.1500 | 2233333333 | 2222222222 |
| 25.5230 | 2233333333 | 2222222222 |
| 25.8960 | 2233333333 | 2222222222 |
| 26.2690 | 2233333333 | 2222222222 |
| 26.6420 | 2233333333 | 2222222222 |
| 27.0150 | 2233333333 | 2222222222 |
| 27.3880 | 2233333333 | 2222222222 |
| 27.7610 | 2233333333 | 2222222222 |
| 28.1340 | 2233333333 | 2222222222 |
| 28.5070 | 2233333333 | 2222222222 |
| 28.8800 | 2233333333 | 2222222222 |
| 29.2530 | 2233333333 | 2222222222 |
| 29.6260 | 2233333333 | 2222222222 |
| 30.0000 | 2233333333 | 2222222222 |

STAGE OUTPUT TOTAL 1-90 SECONDS (7 POINTS)

| RADIUS | TEMPQATJRE |
|--------|------------|
| 6.1271 | 532.233    |
| 6.5060 | 532.197    |
| 6.0350 | 535.937    |
| 6.1650 | 535.505    |
| 7.4930 | 539.525    |
| 7.9220 | 635.473    |
| 8.1610 | 612.153    |

STAGE OUTLET FLOW ANGLES (3 POINTS)

| RAJUS   | ANGLE |
|---------|-------|
| 16994.4 | 1.227 |
| 6941.2  | 1.257 |
| 8229.7  | 1.277 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 12.3789  
 -8.0010 12.6370  
 -7.7510 13.9107  
 -7.5010 15.5057  
 -7.2510 16.2160  
 -7.0010 17.0842  
 -6.7510 17.5670  
 -6.5010 17.7229  
 -6.2510 18.4217  
 -6.0010 19.0305  
 -5.7510 19.3454  
 -5.5010 19.5454  
 -5.2510 19.5454

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8439 18.2795  
 -5.5030 18.2795

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. TIME BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|---------------------|
| 1       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |
| 2       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |
| 3       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |
| 4       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |
| 5       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |
| 6       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |
| 7       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |
| 8       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |
| 9       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |
| 10      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |
| 11      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |
| 12      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |
| 13      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | 0.0000              |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



512153012A0  
\$3.5606  
47.0934  
15.1964  
14.6708  
5.1966  
- .00071

TEST POINT TITLE

GAS CONSTANT  
AIR NAME FRACTION  
FLOW RATE  
FLOTTOT TOTAL PRESSURE  
INLET TON(SID) TEMPERATURE  
INLET IN(SID)

ROTOR OUTLET TOTAL PRESSURE (° POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 23.451   |
| 5.1500 | 23.158   |
| 5.1750 | 22.704   |
| 5.2000 | 22.200   |
| 5.2250 | 21.656   |
| 5.2500 | 21.072   |
| 5.2750 | 20.448   |
| 5.3000 | 19.784   |
| 5.3250 | 19.080   |
| 5.3500 | 18.336   |
| 5.3750 | 17.552   |
| 5.4000 | 16.728   |
| 5.4250 | 15.864   |
| 5.4500 | 14.960   |
| 5.4750 | 14.016   |
| 5.5000 | 13.032   |
| 5.5250 | 12.008   |
| 5.5500 | 10.944   |
| 5.5750 | 9.840    |
| 5.6000 | 8.696    |
| 5.6250 | 7.512    |
| 5.6500 | 6.288    |
| 5.6750 | 5.024    |
| 5.7000 | 3.728    |
| 5.7250 | 2.392    |
| 5.7500 | 1.016    |
| 5.7750 | -0.304   |
| 5.8000 | -1.576   |
| 5.8250 | -2.800   |
| 5.8500 | -3.976   |
| 5.8750 | -5.104   |
| 5.9000 | -6.184   |
| 5.9250 | -7.216   |
| 5.9500 | -8.200   |
| 5.9750 | -9.136   |
| 6.0000 | -10.024  |
| 6.0250 | -10.864  |
| 6.0500 | -11.656  |
| 6.0750 | -12.400  |
| 6.1000 | -13.096  |
| 6.1250 | -13.744  |
| 6.1500 | -14.344  |
| 6.1750 | -14.896  |
| 6.2000 | -15.400  |
| 6.2250 | -15.856  |
| 6.2500 | -16.264  |
| 6.2750 | -16.624  |
| 6.3000 | -16.936  |
| 6.3250 | -17.200  |
| 6.3500 | -17.416  |
| 6.3750 | -17.584  |
| 6.4000 | -17.704  |
| 6.4250 | -17.776  |
| 6.4500 | -17.800  |
| 6.4750 | -17.776  |
| 6.5000 | -17.704  |
| 6.5250 | -17.584  |
| 6.5500 | -17.416  |
| 6.5750 | -17.200  |
| 6.6000 | -16.936  |
| 6.6250 | -16.624  |
| 6.6500 | -16.264  |
| 6.6750 | -15.856  |
| 6.7000 | -15.400  |
| 6.7250 | -14.896  |
| 6.7500 | -14.344  |
| 6.7750 | -13.744  |
| 6.8000 | -13.096  |
| 6.8250 | -12.400  |
| 6.8500 | -11.656  |
| 6.8750 | -10.864  |
| 6.9000 | -10.024  |
| 6.9250 | -9.136   |
| 6.9500 | -8.200   |
| 6.9750 | -7.216   |
| 7.0000 | -6.184   |
| 7.0250 | -5.104   |
| 7.0500 | -3.976   |
| 7.0750 | -2.800   |
| 7.1000 | -1.576   |
| 7.1250 | -0.304   |
| 7.1500 | 0.928    |
| 7.1750 | 2.192    |
| 7.2000 | 3.496    |
| 7.2250 | 4.840    |
| 7.2500 | 6.224    |
| 7.2750 | 7.648    |
| 7.3000 | 9.112    |
| 7.3250 | 10.616   |
| 7.3500 | 12.160   |
| 7.3750 | 13.744   |
| 7.4000 | 15.368   |
| 7.4250 | 17.032   |
| 7.4500 | 18.736   |
| 7.4750 | 20.480   |
| 7.5000 | 22.264   |
| 7.5250 | 24.088   |
| 7.5500 | 25.952   |
| 7.5750 | 27.856   |
| 7.6000 | 29.800   |
| 7.6250 | 31.784   |
| 7.6500 | 33.808   |
| 7.6750 | 35.872   |
| 7.7000 | 37.976   |
| 7.7250 | 40.120   |
| 7.7500 | 42.304   |
| 7.7750 | 44.528   |
| 7.8000 | 46.792   |
| 7.8250 | 49.096   |
| 7.8500 | 51.440   |
| 7.8750 | 53.824   |
| 7.9000 | 56.248   |
| 7.9250 | 58.712   |
| 7.9500 | 61.216   |
| 7.9750 | 63.760   |
| 8.0000 | 66.344   |
| 8.0250 | 68.968   |
| 8.0500 | 71.632   |
| 8.0750 | 74.336   |
| 8.1000 | 77.080   |
| 8.1250 | 79.864   |
| 8.1500 | 82.688   |
| 8.1750 | 85.552   |
| 8.2000 | 88.456   |
| 8.2250 | 91.400   |
| 8.2500 | 94.384   |
| 8.2750 | 97.408   |
| 8.3000 | 100.472  |
| 8.3250 | 103.576  |
| 8.3500 | 106.720  |
| 8.3750 | 109.904  |
| 8.4000 | 113.128  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.0    | 91.962      |
| 1.50   | 117.124     |
| 2.50   | 133.009     |
| 3.50   | 145.625     |
| 4.50   | 155.983     |
| 5.50   | 164.963     |
| 6.50   | 172.640     |
| 7.50   | 179.063     |
| 8.50   | 184.274     |

**STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)**

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 0      | 0         | 0         |
| 250    | 0         | 0         |
| 500    | 0         | 0         |
| 750    | 0         | 0         |
| 1000   | 0         | 0         |
| 1250   | 0         | 0         |
| 1500   | 0         | 0         |
| 1750   | 0         | 0         |
| 2000   | 0         | 0         |
| 2250   | 0         | 0         |
| 2500   | 0         | 0         |
| 2750   | 0         | 0         |
| 3000   | 0         | 0         |
| 3250   | 0         | 0         |
| 3500   | 0         | 0         |
| 3750   | 0         | 0         |
| 4000   | 0         | 0         |
| 4250   | 0         | 0         |
| 4500   | 0         | 0         |
| 4750   | 0         | 0         |
| 5000   | 0         | 0         |
| 5250   | 0         | 0         |
| 5500   | 0         | 0         |
| 5750   | 0         | 0         |
| 6000   | 0         | 0         |
| 6250   | 0         | 0         |
| 6500   | 0         | 0         |
| 6750   | 0         | 0         |
| 7000   | 0         | 0         |
| 7250   | 0         | 0         |
| 7500   | 0         | 0         |
| 7750   | 0         | 0         |
| 8000   | 0         | 0         |
| 8250   | 0         | 0         |
| 8500   | 0         | 0         |
| 8750   | 0         | 0         |
| 9000   | 0         | 0         |
| 9250   | 0         | 0         |
| 9500   | 0         | 0         |
| 9750   | 0         | 0         |
| 10000  | 0         | 0         |
| 10250  | 0         | 0         |
| 10500  | 0         | 0         |
| 10750  | 0         | 0         |
| 11000  | 0         | 0         |
| 11250  | 0         | 0         |
| 11500  | 0         | 0         |
| 11750  | 0         | 0         |
| 12000  | 0         | 0         |
| 12250  | 0         | 0         |
| 12500  | 0         | 0         |
| 12750  | 0         | 0         |
| 13000  | 0         | 0         |
| 13250  | 0         | 0         |
| 13500  | 0         | 0         |
| 13750  | 0         | 0         |
| 14000  | 0         | 0         |
| 14250  | 0         | 0         |
| 14500  | 0         | 0         |
| 14750  | 0         | 0         |
| 15000  | 0         | 0         |
| 15250  | 0         | 0         |
| 15500  | 0         | 0         |
| 15750  | 0         | 0         |
| 16000  | 0         | 0         |
| 16250  | 0         | 0         |
| 16500  | 0         | 0         |
| 16750  | 0         | 0         |
| 17000  | 0         | 0         |
| 17250  | 0         | 0         |
| 17500  | 0         | 0         |
| 17750  | 0         | 0         |
| 18000  | 0         | 0         |
| 18250  | 0         | 0         |
| 18500  | 0         | 0         |
| 18750  | 0         | 0         |
| 19000  | 0         | 0         |
| 19250  | 0         | 0         |
| 19500  | 0         | 0         |
| 19750  | 0         | 0         |
| 20000  | 0         | 0         |
| 20250  | 0         | 0         |
| 20500  | 0         | 0         |
| 20750  | 0         | 0         |
| 21000  | 0         | 0         |
| 21250  | 0         | 0         |
| 21500  | 0         | 0         |
| 21750  | 0         | 0         |
| 22000  | 0         | 0         |
| 22250  | 0         | 0         |
| 22500  | 0         | 0         |
| 22750  | 0         | 0         |
| 23000  | 0         | 0         |
| 23250  | 0         | 0         |
| 23500  | 0         | 0         |
| 23750  | 0         | 0         |
| 24000  | 0         | 0         |
| 24250  | 0         | 0         |
| 24500  | 0         | 0         |
| 24750  | 0         | 0         |
| 25000  | 0         | 0         |
| 25250  | 0         | 0         |
| 25500  | 0         | 0         |
| 25750  | 0         | 0         |
| 26000  | 0         | 0         |
| 26250  | 0         | 0         |
| 26500  | 0         | 0         |
| 26750  | 0         | 0         |
| 27000  | 0         | 0         |
| 27250  | 0         | 0         |
| 27500  | 0         | 0         |
| 27750  | 0         | 0         |
| 28000  | 0         | 0         |
| 28250  | 0         | 0         |
| 28500  | 0         | 0         |
| 28750  | 0         | 0         |
| 29000  | 0         | 0         |
| 29250  | 0         | 0         |
| 29500  | 0         | 0         |
| 29750  | 0         | 0         |
| 30000  | 0         | 0         |
| 30250  | 0         | 0         |
| 30500  | 0         | 0         |
| 30750  | 0         | 0         |
| 31000  | 0         | 0         |
| 31250  | 0         | 0         |
| 31500  | 0         | 0         |
| 31750  | 0         | 0         |
| 32000  | 0         | 0         |
| 32250  | 0         | 0         |
| 32500  | 0         | 0         |
| 32750  | 0         | 0         |
| 33000  | 0         | 0         |
| 33250  | 0         | 0         |
| 33500  | 0         | 0         |
| 33750  | 0         | 0         |
| 34000  | 0         | 0         |
| 34250  | 0         | 0         |
| 34500  | 0         | 0         |
| 34750  | 0         | 0         |
| 35000  | 0         | 0         |
| 35250  | 0         | 0         |
| 35500  | 0         | 0         |
| 35750  | 0         | 0         |
| 36000  | 0         | 0         |
| 36250  | 0         | 0         |
| 36500  | 0         | 0         |
| 36750  | 0         | 0         |
| 37000  | 0         | 0         |
| 37250  | 0         | 0         |
| 37500  | 0         | 0         |
| 37750  | 0         |           |

STAGE OUTLET TOTAL TEMPERATURES ( / POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.170  | 592.805     |
| 6.160  | 595.123     |
| 6.050  | 597.229     |
| 6.040  | 600.350     |
| 7.030  | 603.523     |
| 7.020  | 610.627     |
| 6.160  |             |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| ANGLE  | RADIUS |
|--------|--------|
| -1.132 | 7.0220 |
| 3.031  | 7.1460 |
| 3.403  | 6.6560 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 12.6191  |
| -8.0010 | 13.0517  |
| -7.7510 | 14.3263  |
| -7.5010 | 15.6863  |
| -7.2510 | 16.6173  |
| -7.0010 | 17.4364  |
| -6.7510 | 17.9949  |
| -6.5010 | 18.1169  |
| -6.2510 | 18.6700  |
| -6.0010 | 18.3699  |
| -5.7510 | 19.0942  |
| -5.5010 | 19.0942  |
| -5.2510 | 19.0942  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8492 | 18.8697  |
| -2.5080 | 18.8697  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TO BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |
| 2       | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |
| 3       | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |
| 4       | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |
| 5       | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |
| 6       | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |
| 7       | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |
| 8       | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |
| 9       | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |
| 10      | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |
| 11      | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |
| 12      | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |
| 13      | 0.0000   | 1.00000      | -0.0000            | -0.0000      | -0.0000           |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NHACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |

NJUMP= 0



[illegible]

TEST 20111127

218  
SAS  
CONSULT - TON

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
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23702 DUTY TOTAL DATES 1 9 2015 15

Figure 1 is a schematic representation of the experimental design. It shows a sequence of events: a subject is presented with a stimulus (a word), then a response is generated (a word), and finally, a feedback is provided (a word). The sequence is labeled 'Stimulus', 'Response', and 'Feedback'.

90808 30ULF YDYL T-42647048 ( 4 801415)

[illegible]

**STAGE 170C 127100 78101 1397536 21 SEP 88 1614Z**

[illegible]

15MHC 4 1 5601W3471 7A101 157100 19815

[illegible]

STAGE OUTLET FLOW ANGLES (Y POINTS)

R40105  
 7.0220  
 7.1440  
 6.6963  
 4N2L1  
 -1.274  
 2.104  
 1.175



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 12.7033  
 -8.7010 13.1365  
 -7.7510 14.4103  
 -7.2510 15.6405  
 -7.0010 16.6286  
 -6.7510 17.4810  
 -6.5010 18.1643  
 -6.2510 18.7305  
 -6.0010 19.5940  
 -5.7510 19.9011  
 -5.5010 19.2101  
 -5.2510 19.7101

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8419 15.9613  
 -.5810 15.9515

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | JISY. FACTOR | Y10 ADJ. DEVIATION | DIST. FACTOR | FRAC. YEE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | 3.000              | -0.0000      | -0.0000            |
| 2       | 0.0000   | 1.0000       | -3.000             | -0.0000      | -0.0000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP 0



85% SPEEDLINE PHASE II INPUT DATA



NTFC 334FI 2224130Z NL, 95Z SPEED, ACROSS-GLIDE ANALYSIS 23MAR76

**PAGE**

M-H-D-O-O-H-G-N-Q-H-O-M  
M-N-N N-N-N  
H  
H H H H H H H H H H

**AMULTE SPECIFICITY**

51706 Z AB 051133Z 1 1011025

1157 1158

9,350 13,450

SHIOE 7 AB 634735 3 011715

151  
151

[illegible]

511200 7 AB C31J3E45 I NO11715

9374 23124

1953-1954

STATION 4 SEC 16 T 2 S R 2 E

150 150

1.5400  
-3.7559

SM100 4 AB 031103ds 5 H011715

158  
159

2671.6-  
0005.2

STATION 6 SPECIFIED BY 2 POLY'S

PSM MIS

[illegible]

NO 11415 2 353555 2 9 100 114

# RESUME

[illegible][illegible]

6375-4  
6375-9



# STATION 8 SPECIFIED BY 9 POINTS

| PSIN   | XSTN    |
|--------|---------|
| 4.4512 | -5.1150 |
| 4.6300 | -5.1000 |
| 4.8000 | -5.2500 |
| 5.0000 | -5.1490 |
| 5.2000 | -5.1717 |
| 5.4000 | -5.2405 |
| 5.6000 | -5.3709 |
| 5.8000 | -5.6015 |
| 6.0000 | -5.7500 |

# STATION 9 SPECIFIED BY 4 POINTS

| RSIN   | XSTN    |
|--------|---------|
| 4.5534 | -5.1700 |
| 5.2300 | -5.0000 |
| 5.8000 | -4.9500 |
| 6.5000 | -5.3500 |

# STATION 10 SPECIFIED BY 4 POINTS

| RSIN   | XSTN    |
|--------|---------|
| 4.6433 | -5.0250 |
| 5.2500 | -4.7750 |
| 5.8000 | -4.6500 |
| 6.5000 | -4.3000 |

# STATION 11 SPECIFIED BY 2 POINTS

| RSIN   | XSTN    |
|--------|---------|
| 5.6314 | -2.4993 |
| 6.5000 | -2.2170 |

# STATION 12 SPECIFIED BY 2 POINTS

| RSIN   | XSTN    |
|--------|---------|
| 5.7306 | -0.3201 |
| 6.5000 | -0.3203 |

# STATION 13 SPECIFIED BY 2 POINTS

| RSIN   | XSTN   |
|--------|--------|
| 5.7306 | 0.0002 |
| 6.5000 | 0.0000 |

# STATION CALCULATION SPECIFICATION AND SLADING DATA

|           |           |            |          |
|-----------|-----------|------------|----------|
| STATION 2 | NCALC = 0 | NDATA = -0 | NRL = -0 |
| STATION 3 | NCALC = 0 | NDATA = -0 | NRL = -0 |
| STATION 4 | NCALC = 0 | NDATA = -0 | NRL = -0 |
| STATION 5 | NCALC = 0 | NDATA = -0 | NRL = -0 |
| STATION 6 | NCALC = 0 | NDATA = -0 | NRL = -0 |







# ROTOR GENERALIZED PERFORMANCE LOSS 2PTS DEVIATION 2PTS

M-COORD LOSS COEFF/TOTAL LOSS COEFF

0.0000  
1.0000

OUTLET RADIUS = 0.0000

M-COORD DEVIATION ANGLE (DEGREES)

0.0000  
1.0000

# STATOR GENERALIZED PERFORMANCE LOSS 2PTS DEVIATION 2PTS

M-COORD LOSS COEFF/TOTAL LOSS COEFF

0.0000  
1.0000

OUTLET RADIUS = 0.0000

M-COORD DEVIATION ANGLE (DEGREES)

0.0000  
1.0000

NUMBER OF TEST POINTS TO BE ANALYSED = 7

PSCALE= 0.00 PLOWER= 0.00 DAMPF= 7.000 NSAVE= 1

NMAX= 0 MFORCE= 0 NEX= 2



# TEST DATA PRINTOUT FOR POINT NO. 1

## TEST POINT TITLE

GAS CONSTANT  
 FLOW MATERIAL  
 ROTOR INLET TOTAL PRESSURE  
 ROTOR INLET TOTAL TEMPERATURE  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/2 IN(12)

51216020003  
 51.4679  
 199637  
 53.4051  
 17231.2  
 15.6944  
 516.708  
 195149  
 .00913

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 24.0939  |
| 5.1500 | 24.0939  |
| 5.1750 | 24.0939  |
| 5.2000 | 24.0939  |
| 5.2250 | 24.0939  |
| 5.2500 | 24.0939  |
| 5.2750 | 24.0939  |
| 5.3000 | 24.0939  |
| 5.3250 | 24.0939  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 600.270     |
| 5.1500 | 601.355     |
| 5.1750 | 602.512     |
| 5.2000 | 603.760     |
| 5.2250 | 605.064     |
| 5.2500 | 606.454     |
| 5.2750 | 607.892     |
| 5.3000 | 609.372     |
| 5.3250 | 610.891     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES. | PEAK PRES |
|--------|------------|-----------|
| 6.1270 | 24.0939    | 24.0939   |
| 6.1500 | 24.0939    | 24.0939   |
| 6.1750 | 24.0939    | 24.0939   |
| 6.2000 | 24.0939    | 24.0939   |
| 6.2250 | 24.0939    | 24.0939   |
| 6.2500 | 24.0939    | 24.0939   |
| 6.2750 | 24.0939    | 24.0939   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 601.527     |
| 6.1500 | 602.811     |
| 6.1750 | 604.100     |
| 6.2000 | 605.405     |
| 6.2250 | 606.726     |
| 6.2500 | 608.062     |
| 6.2750 | 609.414     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0220 | 1.142 |
| 7.1250 | 1.142 |
| 6.6560 | 1.142 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 11.3172  |
| -8.0310 | 11.5234  |
| -7.7510 | 13.2377  |
| -7.5010 | 15.3133  |
| -7.2010 | 17.2330  |
| -6.7510 | 17.9807  |
| -6.5010 | 18.2573  |
| -6.2010 | 19.1410  |
| -5.7510 | 19.9104  |
| -5.5010 | 19.3627  |
| -5.2510 | 19.3337  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8419 | 19.0601  |
| -2.5030 | 19.0501  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TIE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |
| 2       | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |
| 3       | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |
| 4       | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |
| 5       | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |
| 6       | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |
| 7       | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |
| 8       | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |
| 9       | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |
| 10      | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |
| 11      | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |
| 12      | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |
| 13      | 0.0000   | 1.0000       | 0.0000             | 0.0000       | 0.0000             |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |
| NJUMP   | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



TEST DATA PRINTOUT FOR POINT NO. 2

TEST POINT TITLE  
 GAS CONSTANT  
 AIR FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN(SID)

51216330265  
 52.4638  
 51.9953  
 51.2227  
 51.6934  
 51.9513  
 51.6934

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.0000 | 51.7400  |
| 5.1250 | 51.7400  |
| 5.2500 | 51.7400  |
| 5.3750 | 51.7400  |
| 5.5000 | 51.7400  |
| 5.6250 | 51.7400  |
| 5.7500 | 51.7400  |
| 5.8750 | 51.7400  |
| 6.0000 | 51.7400  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.0000 | 50.0000     |
| 5.1250 | 50.0000     |
| 5.2500 | 50.0000     |
| 5.3750 | 50.0000     |
| 5.5000 | 50.0000     |
| 5.6250 | 50.0000     |
| 5.7500 | 50.0000     |
| 5.8750 | 50.0000     |
| 6.0000 | 50.0000     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 5.0000 | 51.7400   | 51.7400   |
| 5.1250 | 51.7400   | 51.7400   |
| 5.2500 | 51.7400   | 51.7400   |
| 5.3750 | 51.7400   | 51.7400   |
| 5.5000 | 51.7400   | 51.7400   |
| 5.6250 | 51.7400   | 51.7400   |
| 5.7500 | 51.7400   | 51.7400   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.0000 | 50.0000     |
| 5.1250 | 50.0000     |
| 5.2500 | 50.0000     |
| 5.3750 | 50.0000     |
| 5.5000 | 50.0000     |
| 5.6250 | 50.0000     |
| 5.7500 | 50.0000     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE  |
|--------|--------|
| 5.0000 | 1.0000 |
| 5.1250 | 1.0000 |
| 5.2500 | 1.0000 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510  
-8.0010  
-7.7510  
-7.5010  
-7.2510  
-6.7510  
-6.5010  
-6.2510  
-5.7510  
-5.5190

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499  
-2.5099

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. DEV. ADJ. | DIST. FACTOR | FRAC. TE. BLOCKAGE |
|---------|----------|--------------|----------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |
| 2       | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |
| 3       | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |
| 4       | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |
| 5       | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |
| 6       | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |
| 7       | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |
| 8       | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |
| 9       | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |
| 10      | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |
| 11      | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |
| 12      | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |
| 13      | 0.0000   | 1.0000       | -0.000         | -0.000       | -0.000             |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



TEST DATA PRINTOUT FOR POINT NO. 3

TEST POINT TITLE  
GAS CONSTANT  
AIR MASS FRACTION  
FLOW RATE  
ROTOR SPEED  
INLET TOTAL PRESSURE  
INLET TOTAL TEMPERATURE  
INLET INLET  
P INLET INLET

512161-91082  
53.9832  
17.2174  
1.9513  
1.9513  
1.9513  
1.9513  
1.9513

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 28.7394  |
| 5.1300 | 28.7394  |
| 5.1350 | 28.7394  |
| 5.1400 | 28.7394  |
| 5.1450 | 28.7394  |
| 5.1500 | 28.7394  |
| 5.1550 | 28.7394  |
| 5.1600 | 28.7394  |
| 5.1650 | 28.7394  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 600.672     |
| 5.1300 | 600.672     |
| 5.1350 | 600.672     |
| 5.1400 | 600.672     |
| 5.1450 | 600.672     |
| 5.1500 | 600.672     |
| 5.1550 | 600.672     |
| 5.1600 | 600.672     |
| 5.1650 | 600.672     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 25.1342   | 25.0322   |
| 6.1300 | 25.1342   | 25.0322   |
| 6.1350 | 25.1342   | 25.0322   |
| 6.1400 | 25.1342   | 25.0322   |
| 6.1450 | 25.1342   | 25.0322   |
| 6.1500 | 25.1342   | 25.0322   |
| 6.1550 | 25.1342   | 25.0322   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 600.672     |
| 6.1300 | 600.672     |
| 6.1350 | 600.672     |
| 6.1400 | 600.672     |
| 6.1450 | 600.672     |
| 6.1500 | 600.672     |
| 6.1550 | 600.672     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0220 | 1.172 |
| 7.0220 | 1.172 |
| 7.0220 | 1.172 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

12.7310  
12.7310  
13.7310  
13.7310  
17.7310  
17.7310  
18.7310  
18.7310  
19.7310  
19.7310  
19.7310  
19.7310  
19.7310

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8419 19.7119  
-2.5083 19.7119

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. TIME BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|---------------------|
| 1       | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |
| 2       | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |
| 3       | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |
| 4       | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |
| 5       | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |
| 6       | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |
| 7       | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |
| 8       | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |
| 9       | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |
| 10      | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |
| 11      | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |
| 12      | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |
| 13      | 0.0000   | 1.0000       | -0.000              | -0.0000      | 0.0000              |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
NMACH 0 -3 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0







# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

8.7510 12.1513  
 -3.0910 12.2413  
 -7.7510 13.9454  
 -7.2510 15.9793  
 -7.0310 16.7326  
 -6.7510 17.8373  
 -6.5210 18.6021  
 -6.2510 18.7974  
 -6.0010 19.4199  
 -5.7510 19.5301  
 -2.5674 20.3283  
 -5.190 20.0861  
 -2.5190 20.0861

# HUR STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8+99 19.8261  
 -.5030 19.8261

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. TIME BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|---------------------|
| 1       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 2       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 3       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 4       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 5       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 6       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 7       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 8       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 9       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 10      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 11      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 12      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |
| 13      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000             |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



```
= 512160601895  
= 3.46347  
= 50.2323  
= 51216044  
= 14.5708  
= 19.5316  
= .89696
```

GAS CONSTANT  
 AIR FLOW RATE  
 ROTOR SPEED  
 INLET TEMPERATURE  
 INLET PRESSURE

| RADIUS | PRESSURE |
|--------|----------|
| 5.50   | 2.25     |
| 5.00   | 2.50     |
| 4.50   | 2.75     |
| 4.00   | 3.00     |
| 3.50   | 3.25     |
| 3.00   | 3.50     |
| 2.50   | 3.75     |
| 2.00   | 4.00     |
| 1.50   | 4.25     |
| 1.00   | 4.50     |
| 0.50   | 4.75     |
| 0.00   | 5.00     |

[illegible][illegible]

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 6.12600 | 602.603     |
| 6.16600 | 606.071     |
| 6.20600 | 609.535     |
| 6.24600 | 613.000     |
| 6.28600 | 616.465     |
| 6.32600 | 619.930     |

| RADIUS | ANGLE  |
|--------|--------|
| 7.8220 | -1.157 |
| 7.1460 | 1.419  |
| 6.4660 | 3.195  |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-3.7510 12.2305  
 -8.0010 12.3844  
 -7.7510 14.1144  
 -7.5010 16.0241  
 -7.0010 18.0093  
 -6.7510 18.7275  
 -6.5010 18.9216  
 -6.2510 19.5338  
 -6.0010 19.6040  
 -5.7510 20.3988  
 -2.5674 20.2263  
 -.5190 20.2253

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.0439 19.9723  
 -.5080 19.9723

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | H/D DEV. A.D. | DIST. FACTOR | FRAC. T.E. BLOCKAGE |
|---------|----------|--------------|---------------|--------------|---------------------|
| 1       | 0.0000   | 1.0000       | -0.000        | -0.000       | -0.000              |
| 2       | 0.0000   | 1.0000       | -0.000        | -0.000       | -0.000              |
| 3       | 0.0000   | 1.0000       | -0.000        | -0.000       | -0.000              |
| 4       | 0.0000   | 1.0000       | -0.000        | -0.000       | -0.000              |
| 5       | 0.0000   | 1.0000       | -0.000        | -0.000       | -0.000              |
| 6       | 0.0000   | 1.0000       | -0.000        | -0.000       | -0.000              |
| 7       | 0.0000   | 1.5000       | -0.000        | -0.000       | -0.000              |
| 8       | 0.0000   | .5000        | -0.000        | -0.000       | -0.000              |
| 9       | 0.0000   | .5000        | -0.000        | -0.000       | -0.000              |
| 10      | 0.0000   | .5000        | -0.000        | -0.000       | -0.000              |
| 11      | .0500    | 1.0000       | -0.000        | -0.000       | -0.000              |
| 12      | .0500    | 1.0000       | -0.000        | -0.000       | -0.000              |
| 13      | .0500    | 1.0000       | -0.000        | -0.000       | -0.000              |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0  
 NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 6

TEST POINT TITLE  
 GAS CONSTANT  
 ALP MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/1 IN(SID)  
 P IN/1 IN(SID)

= 512150702235  
 = 53.44648  
 = 50.99846  
 = 50.215+8  
 = 17218.2  
 = 14.6944  
 = 518.709  
 = .95179  
 = .89779

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 24.8093  |
| 5.1500 | 24.8123  |
| 5.1750 | 24.8153  |
| 5.2000 | 24.8183  |
| 5.2250 | 24.8213  |
| 5.2500 | 24.8243  |
| 5.2750 | 24.8273  |
| 5.3000 | 24.8303  |
| 5.3250 | 24.8333  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 601.745     |
| 5.1500 | 601.771     |
| 5.1750 | 601.797     |
| 5.2000 | 601.823     |
| 5.2250 | 601.849     |
| 5.2500 | 601.875     |
| 5.2750 | 601.901     |
| 5.3000 | 601.927     |
| 5.3250 | 601.953     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 24.4633   | 24.9237   |
| 6.1560 | 24.4722   | 24.9331   |
| 6.1850 | 24.4811   | 24.9425   |
| 6.2140 | 24.4900   | 24.9519   |
| 6.2430 | 24.4989   | 24.9613   |
| 6.2720 | 24.5078   | 24.9707   |
| 6.3010 | 24.5167   | 24.9801   |

## STAGE OUTLET TOTAL TEMPERATURE ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 602.925     |
| 6.1560 | 602.942     |
| 6.1850 | 602.959     |
| 6.2140 | 602.976     |
| 6.2430 | 602.993     |
| 6.2720 | 603.010     |
| 6.3010 | 603.027     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0220 | 1.802 |
| 7.1490 | 1.802 |
| 8.4660 | 1.810 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 12.2963  |
| -8.0010 | 12.4802  |
| -7.7510 | 14.2703  |
| -7.5010 | 16.0333  |
| -7.2510 | 17.0383  |
| -7.0010 | 18.0954  |
| -6.7510 | 18.8185  |
| -6.5010 | 19.0126  |
| -6.2510 | 19.6511  |
| -6.0010 | 19.4447  |
| -5.7510 | 20.3199  |
| -5.5010 | 20.3139  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 20.0682  |
| -2.5080 | 20.0682  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | WIS. DEV. | DIST. FACTOR | FRAC. BLOCKAGE |
|---------|----------|--------------|-----------|--------------|----------------|
| 1       | 0.3000   | 1.0000       | -0.0000   | -0.0000      | -0.0000        |
| 2       | 0.0000   | 1.0000       | -0.0000   | -0.0000      | -0.0000        |
| 3       | 0.0000   | 1.0000       | -0.0000   | -0.0000      | -0.0000        |
| 4       | 0.0000   | 1.0000       | -0.0000   | -0.0000      | -0.0000        |
| 5       | 0.0000   | 1.0000       | -0.0000   | -0.0000      | -0.0000        |
| 6       | 0.0000   | 1.0000       | -0.0000   | -0.0000      | -0.0000        |
| 7       | 0.0000   | 1.0000       | -0.0000   | -0.0000      | -0.0000        |
| 8       | 0.1000   | 1.5000       | -0.0000   | -0.0000      | -0.0000        |
| 9       | 0.0000   | 1.5000       | -0.0000   | -0.0000      | -0.0000        |
| 10      | 0.0000   | 1.5000       | -0.0000   | -0.0000      | -0.0000        |
| 11      | 0.0500   | 1.0000       | -0.0000   | -0.0000      | -0.0000        |
| 12      | 0.0500   | 1.0000       | -0.0000   | -0.0000      | -0.0000        |
| 13      | 0.0500   | 1.0000       | -0.0000   | -0.0000      | -0.0000        |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |
| NJUMP   | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



# TEST DATA PRINTOUT FOR POINT NO. 7

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P INLET IN (STD)  
 P INLET IN (STD)



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 12.3606  
 -8.0010 12.5695  
 -7.7510 14.4181  
 -7.5010 15.0392  
 -7.2510 17.1628  
 -7.0010 18.1748  
 -6.7510 19.9133  
 -6.5010 19.7193  
 -6.2510 19.5924  
 -6.0010 20.4385  
 -5.7510 20.4102  
 -5.5130 20.4102

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499 20.1534  
 -.5080 20.1594

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MIU ADD. DEVIATION | DIST. FACTOR | FRAC. T. BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | 0.1000   | .5000        | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | .5000        | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | .5000        | -0.000             | -0.000       | -0.000            |
| 11      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



PRECEDING PAGE, BLANK, NOT FILMED.

90% SPEEDLINE PHASE II INPUT DATA



PROGRAM UD0200 - AXIAL COMPRESSOR TEST DATA ANALYSIS  
 FIXED DATA PRINTOUT

HTFC CONFIGURATION #1, 90% SPEED, ACROSS-BLADE ANALYSIS, 24MAR76

NUMBER OF STATIONS  
 NUMBER OF STREAMLINES  
 MAXIMUM NUMBER OF ITERATIONS  
 MAXIMUM NUMBER OF ARBITRARY ITERATIONS  
 TOTAL PRESSURE SOURCE INDICATOR  
 TOTAL TEMPERATURE SOURCE INDICATOR  
 STATION NUMBER FOR ROTOR EXIT DATA  
 STATION NUMBER FOR STAGE EXIT DATA  
 NUMBER OF ROTOR BLADES  
 NUMBER OF STATOR BLADES  
 MAXIMUM NUMBER OF LINES PER PAGE  
 MPLOT

ANNULUS SPECIFICATION  
 STATION 1 SPECIFIED BY 2 POINTS

RSTN XSTN

0.0000 -10.0500  
 13.3000 -10.4500

STATION 2 SPECIFIED BY 2 POINTS

RSTN XSTN

0.0000 -12.3000  
 9.6500 -12.9500

STATION 3 SPECIFIED BY 2 POINTS

RSTN XSTN

0.0000 -10.6500  
 8.9500 -12.3500

STATION 4 SPECIFIED BY 2 POINTS

RSTN XSTN

1.5400 -9.7500  
 6.5500 -11.1500

STATION 5 SPECIFIED BY 2 POINTS

RSTN XSTN

2.0550 -8.1137  
 8.5000 -9.6493

STATION 6 SPECIFIED BY 2 POINTS

RSTN XSTN

2.3500 -8.6500  
 8.5500 -8.6500

STATION 7 SPECIFIED BY 6 POINTS

RSTN XSTN

2.5511 -8.1600  
 2.5511 -8.2045  
 2.5511 -8.2603  
 2.5511 -8.3119  
 2.5511 -8.3615  
 2.5511 -8.4113



# STATION 6 SPECIFIED BY 3 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.512  | -2.1120 |
| 4.6300 | -2.3360 |
| 4.8000 | -2.2580 |
| 5.1000 | -5.1390 |
| 5.1054 | -5.1717 |
| 5.6542 | -5.2482 |
| 6.7345 | -5.3703 |
| 7.6661 | -5.5116 |
| 8.5000 | -5.7340 |

# STATION 9 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.5334 | -5.1760 |
| 4.8000 | -2.4300 |
| 5.6000 | -4.3500 |
| 8.5330 | -2.3360 |

# STATION 10 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.6435 | -5.0250 |
| 5.2300 | -4.7750 |
| 5.8200 | -4.6500 |
| 8.5000 | -4.9000 |

# STATION 11 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.5314 | -2.4993 |
| 8.5300 | -2.2174 |

# STATION 12 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.7336 | -1.9200 |
| 9.5000 | -1.3200 |

# STATION 13 SPECIFIED BY 2 POINTS

| RSTN   | XSTN   |
|--------|--------|
| 5.7926 | 0.8100 |
| 9.5000 | 0.7000 |

# STATION CALCULATION SPECIFICATION AND BLADING DATA

|           |           |            |          |
|-----------|-----------|------------|----------|
| STATION 2 | NCALC = 0 | WDATA = -1 | NBL = -0 |
| STATION 3 | NCALC = 0 | WDATA = -0 | NBL = -0 |
| STATION 4 | NCALC = 0 | WDATA = -0 | NBL = -0 |
| STATION 5 | NCALC = 0 | WDATA = -0 | NBL = -0 |
| STATION 6 | NCALC = 0 | WDATA = -0 | NBL = -0 |







ROTOR GENERALIZED PERFORMANCE    LOSS   2PTS    DEVIATION   2PTS  
M-COORD    LOSS COEFF/TOTAL LOSS COEFF

0.0000  
1.0000    0.0000  
            1.0000

OUTLET RADIUS = 0.0000

M-COORD    DEVIATION ANGLE (DEGREES)

0.0000    0.0000  
1.0000    1.0000

STATOR GENERALIZED PERFORMANCE    LOSS   2PTS    DEVIATION   2PTS  
M-COORD    LOSS COEFF/TOTAL LOSS COEFF

0.0000    0.0000  
1.0000    1.0000

OUTLET RADIUS = 0.0000

M-COORD    DEVIATION ANGLE (DEGREES)

0.0000    0.0000  
1.0000    1.0000

NUMBER OF TEST POINTS TO BE ANALYSED = 7

PSCALE= 0.00 PLOWER= 0.00 DAMPF= 7.000 NSAVE= 1

NMAX= 0 MFORCE= 0 NEX= 2



# TEST DATA PRELIMINARY FOR POINT NO. 1

TEST POINT TITLE  
 GAS CONSTANT  
 AIR FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 ROTOR TOTAL PRESSURE  
 INLET TOTAL PRESSURE  
 INLET TEMPERATURE  
 P IN/P EXIST

512170300033  
 53.5277  
 53.9672  
 54.6272  
 14.1227  
 51.1227  
 51.1227  
 51.1227

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS  | PRESSURE |
|---------|----------|
| 5.12500 | 20.1250  |
| 5.12500 | 20.1250  |
| 5.12500 | 20.1250  |
| 5.12500 | 20.1250  |
| 5.12500 | 20.1250  |
| 5.12500 | 20.1250  |
| 5.12500 | 20.1250  |
| 5.12500 | 20.1250  |
| 5.12500 | 20.1250  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS  | PLAN PRES | PEAK PRES |
|---------|-----------|-----------|
| 5.12500 | 25.1250   | 25.1250   |
| 5.12500 | 25.1250   | 25.1250   |
| 5.12500 | 25.1250   | 25.1250   |
| 5.12500 | 25.1250   | 25.1250   |
| 5.12500 | 25.1250   | 25.1250   |
| 5.12500 | 25.1250   | 25.1250   |
| 5.12500 | 25.1250   | 25.1250   |

## STAGE OUTLET TOTAL TEMPERATURE ( 7 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |
| 5.12500 | 60.1250     |

## STAGE OUTLET FLOW ANGLES ( 1 POINTS)

| RADIUS  | ANGLE |
|---------|-------|
| 5.12500 | 1.127 |
| 5.12500 | 1.127 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -5.7510 | 11.1543  |
| -5.0010 | 10.9407  |
| -7.7510 | 12.3340  |
| -7.5010 | 14.3390  |
| -7.2510 | 15.1310  |
| -7.0010 | 15.1586  |
| -6.7510 | 16.2034  |
| -6.5010 | 16.2393  |
| -6.2510 | 16.3324  |
| -6.0010 | 16.3303  |
| -5.7510 | 16.3302  |
| -5.5010 | 20.2224  |
| -5.2510 | 20.2224  |
| -5.0010 | 20.2224  |

# MUD STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.0433 | 19.4773  |
| -5.0430 | 19.6773  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. T. BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|-------------------|
| 1       | 3.3000   | 1.0000       | -3.000              | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -3.000              | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -3.000              | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -3.000              | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -3.000              | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -3.000              | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -3.000              | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -3.000              | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -3.000              | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -3.000              | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -3.000              | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -3.000              | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -3.000              | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

| SOLUTION TYPE | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| INDICATOR     | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |

NUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 2

TEST POINT TITLE

GAS CONSTANT  
 FLOW FRACTION  
 ROTOR FLOW  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN(STD)  
 P IN/P IN(STD)

= 60115030290  
 = 53.4324  
 = 5.99746  
 = 18.9112  
 = 18.1404  
 = 51.6748  
 = 51.6748  
 = .86741

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 26.0523  |
| 5.1500 | 26.7025  |
| 5.1750 | 26.3790  |
| 5.2000 | 26.3604  |
| 5.2250 | 26.4745  |
| 5.2500 | 26.5973  |
| 5.2750 | 27.6232  |
| 5.3000 | 27.6630  |
| 5.3250 | 28.1032  |

ROTOR OUTLET TOTAL TEMPERATURE ( 3 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 610.230     |
| 5.1500 | 611.130     |
| 5.1750 | 617.643     |
| 5.2000 | 615.483     |
| 5.2250 | 613.078     |
| 5.2500 | 623.740     |
| 5.2750 | 624.250     |
| 5.3000 | 634.763     |
| 5.3250 | 646.650     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 25.6433   | 26.2164   |
| 6.1460 | 25.9285   | 26.5074   |
| 6.1650 | 26.0929   | 26.6495   |
| 6.1840 | 26.4781   | 27.0735   |
| 6.2030 | 26.9101   | 27.5132   |
| 6.2220 | 27.3355   | 27.7420   |
| 6.2410 | 27.7696   | 27.8611   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 611.704     |
| 6.1460 | 614.750     |
| 6.1650 | 617.384     |
| 6.1840 | 620.343     |
| 6.2030 | 624.863     |
| 6.2220 | 635.171     |
| 6.2410 | 641.624     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0220 | 1.259 |
| 7.1440 | 1.973 |
| 6.4680 | 2.670 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 11.4716  
 -8.0910 11.0724  
 -7.7510 13.0015  
 -7.5810 14.4341  
 -7.2510 15.7937  
 -7.0910 17.9025  
 -6.7510 18.7548  
 -6.5010 19.1521  
 -6.2510 19.9392  
 -5.9010 20.1911  
 -5.7510 21.1224  
 -2.5674 20.9409  
 -2.5190 20.8403

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499 20.5177  
 -2.5080 20.5177

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADJ. DEVIATION | DIST. FACTOR | FRAC. TEE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 N-TACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 3

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FLOW RATE  
 ROTOR INLET PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/2 IN/STOI

601220301590  
 53.4192  
 55.99167  
 55.0068  
 1015.14  
 14.6944  
 518.708  
 .93280  
 .68457

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS  | PRESSURE |
|---------|----------|
| 2.1200  | 26.31915 |
| 3.1200  | 27.1120  |
| 5.1200  | 28.10997 |
| 6.1200  | 29.10797 |
| 7.1200  | 30.10597 |
| 8.1200  | 31.10397 |
| 9.1200  | 32.10197 |
| 10.1200 | 33.10000 |
| 11.1200 | 34.10000 |
| 12.1200 | 35.10000 |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 2.1200  | 610.155     |
| 3.1200  | 613.153     |
| 5.1200  | 616.151     |
| 6.1200  | 619.149     |
| 7.1200  | 622.147     |
| 8.1200  | 625.145     |
| 9.1200  | 628.143     |
| 10.1200 | 631.141     |
| 11.1200 | 634.139     |
| 12.1200 | 637.137     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS  | MEAN PRES | PEAK PRES |
|---------|-----------|-----------|
| 6.1200  | 25.6688   | 26.2070   |
| 7.1200  | 26.6120   | 27.2070   |
| 8.1200  | 27.5552   | 28.2070   |
| 9.1200  | 28.4984   | 29.2070   |
| 10.1200 | 29.4416   | 30.2070   |
| 11.1200 | 30.3848   | 31.2070   |
| 12.1200 | 31.3280   | 32.2070   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS  | TEMPERATURE |
|---------|-------------|
| 6.1200  | 612.346     |
| 7.1200  | 615.344     |
| 8.1200  | 618.342     |
| 9.1200  | 621.340     |
| 10.1200 | 624.338     |
| 11.1200 | 627.336     |
| 12.1200 | 630.334     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.1200 | 2.445 |
| 8.1200 | 2.204 |
| 9.1200 | 2.006 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -6.7510 | 11.6284  |
| -8.0010 | 11.2217  |
| -7.7510 | 13.3237  |
| -7.5010 | 13.8032  |
| -7.2510 | 16.2209  |
| -7.0010 | 18.1333  |
| -6.7510 | 19.0546  |
| -6.5010 | 19.3511  |
| -6.2510 | 20.1267  |
| -6.0010 | 20.2193  |
| -5.7510 | 21.0929  |
| -5.5074 | 21.0929  |
| -5.5190 |          |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8443 | 20.7824  |
| -5.080  | 20.7824  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 4

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/T IN(STD)  
 P IN/P IN(STD)

= 601220402090  
 = 53.4185  
 = 54.9789  
 = 54.3882  
 = 181.384  
 = 14.6944  
 = 518.708  
 = 519.323  
 = .88634

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 26.0671  |
| 5.1500 | 25.8910  |
| 5.1750 | 26.4399  |
| 5.2000 | 26.5551  |
| 5.2250 | 27.0101  |
| 5.2500 | 26.8379  |
| 5.2750 | 27.6633  |
| 5.3000 | 27.9829  |
| 5.3250 | 28.1172  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 605.945     |
| 5.1500 | 613.146     |
| 5.1750 | 619.648     |
| 5.2000 | 618.389     |
| 5.2250 | 619.324     |
| 5.2500 | 625.148     |
| 5.2750 | 625.963     |
| 5.3000 | 639.320     |
| 5.3250 | 652.783     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 25.7149   | 26.2523   |
| 6.1450 | 25.9207   | 26.6118   |
| 6.1650 | 26.1883   | 26.7266   |
| 6.1850 | 26.15521  | 27.2248   |
| 6.2050 | 26.8981   | 27.5551   |
| 6.2250 | 27.3383   | 27.8929   |
| 6.1610 | 27.4702   | 28.0726   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 612.243     |
| 6.1450 | 615.694     |
| 6.1650 | 619.103     |
| 6.1850 | 621.916     |
| 6.2050 | 627.935     |
| 6.2250 | 636.540     |
| 6.1610 | 646.798     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.6228 | 9.41  |
| 7.1130 | 2.23  |
| 3.4660 | 2.556 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 11.7456  
 -8.0010 11.4045  
 -7.7510 13.5747  
 -7.5010 15.0316  
 -7.2510 16.5993  
 -7.0010 18.3143  
 -6.7510 19.2135  
 -6.5010 19.4811  
 -6.2510 20.2597  
 -6.0010 20.3051  
 -5.7510 21.3679  
 -5.5010 21.2606  
 -5.2510 21.2606  
 -5.0010 21.2606

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8493 20.9539  
 -.5080 20.9539

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TEE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NHACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 5

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOWRATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/T IN(STD)  
 P IN/P IN(STD)

601220502590  
 53.4186  
 53.99783  
 53.6548  
 18138.1  
 14.6944  
 518.708  
 .93173  
 .88844

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 26.8778  |
| 5.3000 | 25.9023  |
| 5.4750 | 26.4939  |
| 5.6500 | 27.0758  |
| 5.8250 | 27.6577  |
| 6.0000 | 28.2396  |
| 6.1750 | 28.8215  |
| 6.3500 | 29.4034  |
| 6.5250 | 30.0000  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 614.021     |
| 5.3000 | 613.463     |
| 5.4750 | 613.904     |
| 5.6500 | 613.346     |
| 5.8250 | 612.787     |
| 6.0000 | 612.229     |
| 6.1750 | 611.671     |
| 6.3500 | 611.112     |
| 6.5250 | 610.554     |
| 6.7000 | 609.996     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 25.7189   | 26.2856   |
| 6.4660 | 25.9799   | 26.5714   |
| 6.8050 | 26.2409   | 26.7385   |
| 7.1440 | 26.4935   | 27.1256   |
| 7.4830 | 26.9111   | 27.5884   |
| 7.8220 | 27.2995   | 27.9289   |
| 8.1610 | 27.4691   | 28.1276   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 612.230     |
| 6.4660 | 616.455     |
| 6.8050 | 619.680     |
| 7.1440 | 622.905     |
| 7.4830 | 626.130     |
| 7.8220 | 629.355     |
| 8.1610 | 632.580     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | .930  |
| 7.1440 | 2.771 |
| 5.4660 | 2.728 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 11.8621  
 -8.0010 11.6288  
 -7.7510 13.3149  
 -7.5010 15.2131  
 -7.2510 16.9314  
 -7.0010 18.4682  
 -6.7510 19.3449  
 -6.5010 19.5832  
 -6.2510 20.3684  
 -6.0010 20.3430  
 -5.7510 21.4206  
 -2.5674 21.3838  
 -.5190 21.3838

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499 21.0818  
 -.5080 21.0818

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. IE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | .1000    | .5000        | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | .5000        | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | .5000        | -0.000             | -0.000       | -0.000            |
| 11      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0  
 NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 6

TEST POINT TITLE  
 GAS CONSTANT  
 AIR FRACTION  
 FLOWRATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN(STO)  
 = 601220603090  
 = 53.4174  
 = 52.9952  
 = 18143.7  
 = 14.6944  
 = 518.709  
 = .93062  
 = .89081

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 26.1182  |
| 5.1250 | 26.6142  |
| 5.1250 | 26.6745  |
| 5.1250 | 26.6796  |
| 5.1250 | 26.6809  |
| 5.1250 | 26.6809  |
| 5.1250 | 26.6809  |
| 5.1250 | 26.6809  |
| 5.1250 | 26.6809  |
| 5.1250 | 26.6809  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 610.214     |
| 5.1250 | 614.013     |
| 5.1250 | 620.511     |
| 5.1250 | 620.264     |
| 5.1250 | 615.808     |
| 5.1250 | 625.714     |
| 5.1250 | 626.903     |
| 5.1250 | 642.584     |
| 5.1250 | 659.806     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 25.7207   | 26.3063   |
| 6.1270 | 25.9986   | 26.5878   |
| 6.1270 | 26.1743   | 26.7445   |
| 6.1270 | 26.4213   | 27.0738   |
| 6.1270 | 26.8662   | 27.5983   |
| 6.1270 | 27.2467   | 27.8938   |
| 6.1270 | 27.3924   | 28.0698   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 612.702     |
| 6.1270 | 617.069     |
| 6.1270 | 619.916     |
| 6.1270 | 622.877     |
| 6.1270 | 630.240     |
| 6.1270 | 641.155     |
| 6.1270 | 650.109     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | 1.152 |
| 7.1440 | 2.036 |
| 6.4660 | 2.762 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 11.9745  |
| -8.0010 | 11.8580  |
| -7.7510 | 14.0591  |
| -7.5010 | 15.3222  |
| -7.2510 | 17.2760  |
| -7.0010 | 18.5853  |
| -6.7510 | 19.4179  |
| -6.5010 | 19.6750  |
| -6.2510 | 20.4500  |
| -6.0010 | 20.3464  |
| -5.7510 | 21.4597  |
| -2.5674 | 21.4971  |
| -5.5190 | 21.4971  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 21.1923  |
| -5.0890 | 21.1923  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. T. BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -3.0000            | -0.0000      | -0.0000           |
| 2       | 0.0000   | 1.0000       | -3.0000            | -0.0000      | -0.0000           |
| 3       | 0.0000   | 1.0000       | -3.0000            | -0.0000      | -0.0000           |
| 4       | 0.0000   | 1.0000       | -3.0000            | -0.0000      | -0.0000           |
| 5       | 0.0000   | 1.0000       | -3.0000            | -0.0000      | -0.0000           |
| 6       | 0.0000   | 1.0000       | -3.0000            | -0.0000      | -0.0000           |
| 7       | 0.0000   | 1.0000       | -3.0000            | -0.0000      | -0.0000           |
| 8       | .1000    | .5000        | -0.0000            | -0.0000      | -0.0000           |
| 9       | 0.0000   | .5000        | -0.0000            | -0.0000      | -0.0000           |
| 10      | 0.0000   | .5000        | -0.0000            | -0.0000      | -0.0000           |
| 11      | .0500    | 1.0000       | -3.0000            | -0.0000      | -0.0000           |
| 12      | .0500    | 1.0000       | -3.0000            | -0.0000      | -0.0000           |
| 13      | .0500    | 1.0000       | -3.0000            | -0.0000      | -0.0000           |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| N-ACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 7

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOWRATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 T IN/1 IN(STD)  
 P IN/P IN(STD)

= 601220703590  
 = 53.4175  
 = 52.9792  
 = 52.1504  
 = 16144.2  
 = 14.6944  
 = 518.708  
 = 5193057  
 = .89275

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 26.1462  |
| 5.5000 | 25.9643  |
| 5.8750 | 26.7319  |
| 6.2500 | 26.6702  |
| 6.6250 | 27.0852  |
| 7.0000 | 26.9361  |
| 7.3750 | 27.7327  |
| 7.7500 | 28.1319  |
| 8.1250 | 28.4030  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 610.132     |
| 5.5000 | 614.609     |
| 5.8750 | 621.020     |
| 6.2500 | 617.573     |
| 6.6250 | 616.206     |
| 7.0000 | 629.516     |
| 7.3750 | 611.747     |
| 7.7500 | 662.377     |
| 8.1250 |             |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 25.7330   | 26.3149   |
| 6.4660 | 25.0474   | 26.6520   |
| 6.8050 | 26.1654   | 26.7536   |
| 7.1440 | 26.3734   | 27.0872   |
| 7.4830 | 26.7370   | 27.4857   |
| 7.8220 | 27.0844   | 27.7935   |
| 8.1610 | 27.2506   | 27.8492   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 612.902     |
| 6.4660 | 617.270     |
| 6.8050 | 620.515     |
| 7.1440 | 623.350     |
| 7.4830 | 631.490     |
| 7.8220 | 642.198     |
| 8.1610 | 651.577     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | 1.917 |
| 7.1440 | 1.731 |
| 6.4660 | 2.488 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 12.0978  
 -8.0010 12.0677  
 -7.7510 14.3370  
 -7.5010 15.3174  
 -7.2510 17.4604  
 -7.0010 18.6906  
 -6.7510 19.4803  
 -6.5010 19.7880  
 -6.2510 20.5375  
 -6.0010 20.3528  
 -5.7510 21.4805  
 -5.5074 21.5793  
 -5.5190 21.5793

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499 21.2756  
 -5.5080 21.2756

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TEE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 8       | 0.1000   | .5000        | -0.000             | -0.000       | -0.000             |
| 9       | 0.0000   | .5000        | -0.000             | -0.000       | -0.000             |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 11      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000             |
| 12      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000             |
| 13      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000             |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



95% SPEEDLINE PHASE II INPUT DATA



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94286892, 51547884, 2644476

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SECRET

[illegible]

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**Ref.: 81-0697**

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**Classification: SECRET**

4574 4574

0.0000 -10.0000

**OFFICE**

THE UNIVERSITY OF CHICAGO

**WICK**

**Figure 6**

AL 6-11365 5 96747

1954 1955

44-38861-100

2010年12月26日

**00000000000000000000000000000000**

**DATE**



NOTED 7 SEP 1964

858 858

[illegible]

100

**Figure 1**

**Figure 1**



# STATION 8 SPECIFIED BY 3 POINTS

RSTN XSTN

4.4612 -5.3150  
4.6000 -5.3080  
4.8000 -5.2680  
5.0000 -5.1890  
5.1067 -5.1777  
5.1852 -5.2485  
5.7945 -5.3708  
7.8561 -5.5016  
8.5000 -5.7940

# STATION 9 SPECIFIED BY 4 POINTS

RSTN XSTN

4.5534 -5.1700  
5.2000 -5.0000  
5.8000 -4.9300  
8.5000 -5.3500

# STATION 10 SPECIFIED BY 4 POINTS

RSTN XSTN

4.6435 -5.0250  
5.2500 -4.7750  
5.8200 -4.6500  
8.5000 -4.9000

# STATION 11 SPECIFIED BY 2 POINTS

RSTN XSTN

5.6314 -2.4999  
8.5000 -2.2174

# STATION 12 SPECIFIED BY 2 POINTS

RSTN XSTN

5.7906 -0.9200  
8.5000 -0.9200

# STATION 13 SPECIFIED BY 2 POINTS

RSTN XSTN

5.7906 0.0000  
8.5000 0.0000

# STATION CALCULATION SPECIFICATION AND BLADING DATA

STATION 2 NCALC = 0 NCATA = -3 NBL = -0  
STATION 3 NCALC = 0 NCATA = -0 NBL = -0  
STATION 4 NCALC = 0 NCATA = -0 NBL = -0  
STATION 5 NCALC = 0 NCATA = -0 NBL = -0  
STATION 6 NCALC = 0 NCATA = -0 NBL = -0







ROTOR GENERALIZED PERFORMANCE    LOSS 2PTS    DEVIATION 2PTS

  M-COORD    LOSS COEFF/TOTAL LOSS COEFF

    0.0000  
    1.0000

OUTLET RADIUS = 0.0000

  M-COORD    DEVIATION ANGLE (DEGREES)

    0.0000  
    1.0000

STATOR GENERALIZED PERFORMANCE    LOSS 2PTS    DEVIATION 2PTS

  M-COORD    LOSS COEFF/TOTAL LOSS COEFF

    0.0000  
    1.0000

OUTLET RADIUS = 0.0000

  M-COORD    DEVIATION ANGLE (DEGREES)

    0.0000  
    1.0000

NUMBER OF TEST POINTS TO BE ANALYSED = 9

PSCALE= 0.00 PLOWR= 0.00 DAMPF= 7.000 NSAVE= 1

NMAX= 0 MFORCE= 0 NEX= 2



TEST DATA PRINTOUT FOR POINT NO. 1

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW AREA  
 FLOW AREA CORRECTED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN(SID)

= 601300190095  
 = 53.96932  
 = 61.321105  
 = 19.32944  
 = 14.693408  
 = 518.4492  
 = .85375

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 27.7395  |
| 5.2500 | 27.7376  |
| 5.3750 | 27.7357  |
| 5.5000 | 27.7338  |
| 5.6250 | 27.7319  |
| 5.7500 | 27.7300  |
| 5.8750 | 27.7281  |
| 6.0000 | 27.7262  |
| 6.1250 | 27.7243  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 621.583     |
| 5.2500 | 621.582     |
| 5.3750 | 621.581     |
| 5.5000 | 621.580     |
| 5.6250 | 621.579     |
| 5.7500 | 621.578     |
| 5.8750 | 621.577     |
| 6.0000 | 621.576     |
| 6.1250 | 621.575     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 26.7375   | 27.0256   |
| 6.4560 | 27.7350   | 28.0256   |
| 6.7850 | 27.7325   | 28.0256   |
| 7.1140 | 27.7300   | 28.0256   |
| 7.4430 | 27.7275   | 28.0256   |
| 7.7720 | 27.7250   | 28.0256   |
| 8.1010 | 27.7225   | 28.0256   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 622.3205    |
| 6.4560 | 622.3205    |
| 6.7850 | 622.3205    |
| 7.1140 | 622.3205    |
| 7.4430 | 622.3205    |
| 7.7720 | 622.3205    |
| 8.1010 | 622.3205    |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0220 | .526  |
| 7.7720 | 1.040 |
| 8.5220 | 1.554 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 10.4275  |
| -8.0010 | 10.1577  |
| -7.7510 | 10.9028  |
| -7.5010 | 11.4773  |
| -7.2510 | 12.8408  |
| -7.0010 | 15.0037  |
| -6.7510 | 16.1372  |
| -6.5010 | 18.7010  |
| -6.2510 | 19.6833  |
| -6.0010 | 20.0868  |
| -5.7510 | 21.3336  |
| -5.5010 | 21.1262  |
| -5.2510 | 21.1262  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 20.7047  |
| -5.0800 | 20.7047  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000              | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |
| NJUMP   | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



# TEST DATA PRINTOUT FOR POINT NO. 2

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN(SID)  
 = 601300200295  
 = 53.4694  
 = 68.3899  
 = 19.329.2  
 = 14.6944  
 = 518.700  
 = .04600  
 = .05546

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 27.9325  |
| 5.3750 | 27.5326  |
| 5.6250 | 28.4597  |
| 5.8750 | 28.6439  |
| 6.1250 | 28.9729  |
| 6.3750 | 28.7798  |
| 6.6250 | 28.0515  |
| 6.8750 | 28.4038  |
| 7.1250 | 30.6874  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 82.736      |
| 5.3750 | 81.762      |
| 5.6250 | 83.1257     |
| 5.8750 | 82.1597     |
| 6.1250 | 82.3281     |
| 6.3750 | 82.4386     |
| 6.6250 | 84.3476     |
| 6.8750 | 88.123      |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 27.3597   | 28.0661   |
| 6.3750 | 27.6230   | 28.7422   |
| 6.6250 | 28.0004   | 28.5834   |
| 6.8750 | 28.5104   | 29.5232   |
| 7.1250 | 29.2477   | 30.5314   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 83.843      |
| 6.3750 | 85.044      |
| 6.6250 | 85.940      |
| 6.8750 | 87.279      |
| 7.1250 | 88.609      |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.1250 | 7.30  |
| 7.3750 | 1.625 |
| 7.6250 | 2.878 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 10.4937  |
| -8.0010 | 10.2645  |
| -7.7510 | 11.4662  |
| -7.5010 | 13.1482  |
| -7.2510 | 15.1154  |
| -7.0010 | 16.7172  |
| -6.7510 | 18.9910  |
| -6.5010 | 19.7469  |
| -6.2510 | 20.6709  |
| -6.0010 | 20.9864  |
| -5.7510 | 22.3196  |
| -5.5674 | 22.1256  |
| -5.5190 | 22.1256  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 21.7542  |
| -5.5080 | 21.7542  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TIE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000             |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |

NJUMP= 0



TEST DATA PRINTOUT FOR POINT NO. 3

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOWRATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/1 IN(SID)  
 P IN/P IN(SID)

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 27.9274  |
| 5.5000 | 27.5310  |
| 5.8750 | 28.5451  |
| 6.2500 | 28.7242  |
| 6.6250 | 28.3591  |
| 7.0000 | 28.3735  |
| 7.3750 | 30.0631  |
| 7.7500 | 30.4772  |
| 8.1250 | 30.3680  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 622.229     |
| 5.5000 | 625.103     |
| 5.8750 | 632.435     |
| 6.2500 | 632.168     |
| 6.6250 | 626.170     |
| 7.0000 | 648.433     |
| 7.3750 | 643.593     |
| 7.7500 | 651.712     |
| 8.1250 | 652.472     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 27.3959   | 28.1227   |
| 6.4560 | 27.7129   | 28.5047   |
| 6.8050 | 28.1153   | 28.4118   |
| 7.1440 | 28.7052   | 29.7087   |
| 7.4830 | 29.2459   | 30.0880   |
| 7.8220 | 29.6334   | 30.5673   |
| 8.1610 | 30.0195   | 30.6438   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 624.263     |
| 6.4560 | 627.507     |
| 6.8050 | 631.185     |
| 7.1440 | 635.590     |
| 7.4830 | 641.623     |
| 7.8220 | 642.523     |
| 8.1610 | 660.109     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | .593  |
| 7.1440 | 1.879 |
| 6.4560 | 2.581 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 10.6028  |
| -8.0010 | 10.3194  |
| -7.7510 | 11.9626  |
| -7.5010 | 13.6846  |
| -7.2510 | 15.5307  |
| -7.0010 | 17.3541  |
| -6.7510 | 19.1849  |
| -6.5010 | 19.8527  |
| -6.2510 | 20.8429  |
| -6.0010 | 21.0943  |
| -5.7510 | 22.3872  |
| -2.5674 | 22.2863  |
| -2.5190 | 22.2853  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 21.9166  |
| -2.5080 | 21.9166  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

| SOLUTION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|----------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| STATION  | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
| NMACH    | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |
| NJUMP    | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



# TEST DATA PRINTOUT FOR POINT NO. 4

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN(STD)  
 = 601300401795  
 = 53.4668  
 = 59.9849  
 = 59.7721  
 = 19.3216  
 = 14.6944  
 = 518.708  
 = .94653  
 = .85923

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 27.9520  |
| 5.3750 | 27.2517  |
| 5.6250 | 28.0426  |
| 5.8750 | 28.8072  |
| 6.1250 | 28.9831  |
| 6.3750 | 29.1848  |
| 6.6250 | 30.1850  |
| 6.8750 | 30.6439  |
| 7.1250 | 30.9920  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 621.816     |
| 5.3750 | 623.317     |
| 5.6250 | 633.379     |
| 5.8750 | 633.672     |
| 6.1250 | 628.201     |
| 6.3750 | 643.147     |
| 6.6250 | 643.182     |
| 6.8750 | 652.342     |
| 7.1250 | 666.094     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 27.4313   | 28.2082   |
| 6.4850 | 27.4889   | 28.5943   |
| 6.8050 | 28.2789   | 28.9463   |
| 7.1170 | 28.7825   | 29.7849   |
| 7.4850 | 29.2903   | 30.1357   |
| 7.8200 | 29.6209   | 30.3393   |
| 8.1610 | 30.1075   | 30.7559   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 624.457     |
| 6.4850 | 627.074     |
| 6.8050 | 633.314     |
| 7.1170 | 633.671     |
| 7.4850 | 643.147     |
| 7.8200 | 643.182     |
| 8.1610 | 652.342     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.4220 | .764  |
| 7.1440 | 1.976 |
| 6.4660 | 2.458 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 10.3157  |
| -8.0010 | 10.4023  |
| -7.7510 | 12.4028  |
| -7.5010 | 14.2361  |
| -7.2510 | 15.8549  |
| -7.0010 | 18.3132  |
| -6.7510 | 19.4302  |
| -6.5010 | 19.9801  |
| -6.2510 | 21.0100  |
| -6.0010 | 21.1747  |
| -5.7510 | 22.5053  |
| -2.5674 | 22.5162  |
| -2.5130 | 22.5162  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 22.1657  |
| -2.5030 | 22.1657  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TEE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NWACH   | 0 | -3 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |
| NJUMP=  | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



TEST DATA PRINTOUT FOR POINT NO. 5

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 T IN/AT IN(STO)  
 P IN/AT IN(STO)

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 27.9305  |
| 5.1500 | 27.6055  |
| 5.1750 | 28.5418  |
| 6.2250 | 28.0320  |
| 7.0000 | 29.0217  |
| 7.0000 | 29.2006  |
| 7.7500 | 30.0011  |
| 7.7500 | 30.6900  |
| 8.1250 | 31.0096  |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 622.122     |
| 5.1500 | 625.674     |
| 5.1750 | 633.924     |
| 6.2250 | 633.617     |
| 7.0000 | 626.941     |
| 7.0000 | 643.243     |
| 7.7500 | 643.603     |
| 7.7500 | 657.103     |
| 8.1250 | 667.502     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 27.9218   | 28.2090   |
| 6.1560 | 27.4864   | 28.6234   |
| 6.1850 | 27.1302   | 28.0175   |
| 7.1440 | 28.0222   | 28.8178   |
| 7.1430 | 29.2281   | 30.2350   |
| 7.8220 | 29.5512   | 30.6417   |
| 8.1610 | 30.1213   | 30.7690   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 624.948     |
| 6.1560 | 624.490     |
| 6.1850 | 637.053     |
| 7.1440 | 637.053     |
| 7.1430 | 646.600     |
| 7.8220 | 650.730     |
| 8.1610 | 663.735     |

STAGE OUTLET IN/AT ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | 1.130 |
| 7.1440 | 1.130 |
| 6.1560 | 1.130 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-6.7510 10.9276  
 -8.0010 10.4415  
 -7.7510 12.5815  
 -7.2510 14.4723  
 -7.0010 15.9814  
 -6.5010 18.5209  
 -6.2510 19.5589  
 -6.0010 20.0227  
 -5.7510 21.0677  
 -5.5010 22.5604  
 -5.2510 22.6092  
 -5.0010 22.6092  
 -4.7510 22.6092  
 -4.5010 22.6092

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499 22.2642  
 -.5080 22.2642

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. IE BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |
| 2       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |
| 3       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |
| 4       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |
| 5       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |
| 6       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |
| 7       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |
| 8       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |
| 9       | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |
| 10      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |
| 11      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |
| 12      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |
| 13      | 0.0000   | 1.0000       | -0.0000             | -0.0000      | -0.0000           |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0







# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 11.0630  |
| -8.0010 | 10.5008  |
| -7.7510 | 12.8192  |
| -7.5010 | 14.7195  |
| -7.2510 | 16.1724  |
| -7.0010 | 18.6751  |
| -6.7510 | 19.7252  |
| -6.5010 | 20.1078  |
| -6.2510 | 21.1728  |
| -6.0010 | 21.2410  |
| -5.7510 | 22.6313  |
| -5.5074 | 22.7119  |
| -5.5190 | 22.7119  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8429 | 22.3861  |
| -5.5080 | 22.3861  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MIQ ADD. DEVIATION | DIST. FACTOR | FRAC. IE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |
| 2       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |
| 3       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |
| 4       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |
| 5       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |
| 6       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |
| 7       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |
| 8       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |
| 9       | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |
| 10      | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |
| 11      | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |
| 12      | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |
| 13      | 0.0000   | 1.0000       | -0.0000            | -0.0000      | -0.0000           |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |

NJUMP= 0



TEST DATA PRINTOUT FOR POINT NO. 7

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOWRATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/PT IN(SIC)  
 P IN/PT IN(SIC)

601290702895  
 53.4465  
 58.0571  
 192.012  
 14.8944  
 518.700  
 .94601  
 .87052

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

PRESSURE

RADIUS

5.1253  
 5.3294  
 5.5335  
 5.7376  
 5.9417  
 6.1458  
 6.3499  
 6.5540  
 6.7581  
 6.9622

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

TEMPERATURE

RADIUS

5.1253  
 5.3294  
 5.5335  
 5.7376  
 5.9417  
 6.1458  
 6.3499  
 6.5540  
 6.7581  
 6.9622

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

MEAN PRES PEAK PRES

RADIUS

6.1273  
 6.3314  
 6.5355  
 6.7396  
 6.9437  
 7.1478  
 7.3519  
 7.5560

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

TEMPERATURE

RADIUS

6.1273  
 6.3314  
 6.5355  
 6.7396  
 6.9437  
 7.1478  
 7.3519  
 7.5560

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

ANGLE

RADIUS

7.0220  
 7.1260  
 6.4560



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 11.2115  |
| -8.0010 | 10.5916  |
| -7.7510 | 13.0946  |
| -7.5010 | 15.0379  |
| -7.2510 | 16.4719  |
| -7.0010 | 18.7533  |
| -6.7510 | 19.6788  |
| -6.5010 | 20.1523  |
| -6.2510 | 21.2285  |
| -6.0010 | 21.2081  |
| -5.7510 | 22.6498  |
| -5.5010 | 22.7972  |
| -5.2510 | 22.7972  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.6499 | 22.4521  |
| -2.5080 | 22.4521  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 |

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 8

TEST POINT TITLE  
 GAS CONSTANT  
 AIR FRACTION  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 INLET IN(SID)  
 P IN/IN(SID)

= 601290003295  
 = 53.6421  
 = 0.2141  
 = 57.2431  
 = 19.6944  
 = 51.8708  
 = 51.8655  
 = .87292

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 27.6793  |
| 5.3000 | 27.7825  |
| 5.4750 | 28.0459  |
| 5.6500 | 28.2495  |
| 5.8250 | 29.1816  |
| 6.0000 | 29.4610  |
| 6.1750 | 30.2114  |
| 6.3500 | 31.8143  |
| 6.5250 | 30.8341  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 621.375     |
| 5.3000 | 626.727     |
| 5.4750 | 635.141     |
| 5.6500 | 633.180     |
| 5.8250 | 627.929     |
| 6.0000 | 645.012     |
| 6.1750 | 645.173     |
| 6.3500 | 675.375     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 27.4673   | 28.2770   |
| 6.3000 | 27.7452   | 28.6444   |
| 6.4750 | 28.5022   | 29.5647   |
| 6.6500 | 29.5219   | 30.1898   |
| 6.8250 | 29.5911   | 30.5112   |
| 7.0000 | 29.7347   | 30.7303   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 625.074     |
| 6.3000 | 623.208     |
| 6.4750 | 634.221     |
| 6.6500 | 634.197     |
| 6.8250 | 650.123     |
| 7.0000 | 652.293     |
| 7.1750 | 669.146     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.0220 | 1.090 |
| 7.1440 | 1.826 |
| 6.6660 | 2.396 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -6.7510 | 11.3927  |
| -6.0010 | 10.7699  |
| -7.7510 | 13.4671  |
| -7.5010 | 13.3643  |
| -7.2510 | 16.9404  |
| -7.0010 | 16.9118  |
| -6.7510 | 19.9930  |
| -6.5010 | 20.2089  |
| -6.2510 | 21.2875  |
| -6.0010 | 21.1710  |
| -5.7510 | 22.7115  |
| -5.5010 | 22.8917  |
| -5.2510 | 22.8917  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8493 | 22.5399  |
| -2.5080 | 22.5399  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADJ. DEVIATION | DIST. FACTOR | FRAC. IE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |
| 2       | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |
| 3       | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |
| 4       | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |
| 5       | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |
| 6       | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |
| 7       | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |
| 8       | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |
| 9       | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |
| 10      | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |
| 11      | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |
| 12      | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |
| 13      | 0.0000   | 1.00000      | -0.000             | -0.0000      | -0.0000           |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NWACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 9

TEST POINT TITLE  
 GAS CONSTANT  
 AIR MASS FRACTION  
 FLOWRATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 INLET IN/STO  
 IN/P IN/STO

601300301095  
 53.4687  
 59.9635  
 60.5594  
 19317.8  
 14.6944  
 518.708  
 5.94640  
 .85684

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 27.9274  |
| 5.5000 | 27.5310  |
| 5.8750 | 26.5651  |
| 6.2500 | 26.7222  |
| 6.6250 | 26.9561  |
| 7.0000 | 26.9736  |
| 7.3750 | 26.0531  |
| 7.7500 | 20.4772  |
| 8.1250 | 30.8680  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 622.220     |
| 5.5000 | 625.103     |
| 5.8750 | 632.433     |
| 6.2500 | 632.100     |
| 6.6250 | 626.170     |
| 7.0000 | 649.433     |
| 7.3750 | 641.593     |
| 7.7500 | 651.712     |
| 8.1250 | 662.472     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 27.3959   | 28.1227   |
| 6.4660 | 27.1129   | 28.5047   |
| 6.8050 | 26.1571   | 28.6116   |
| 7.1440 | 26.1052   | 28.7087   |
| 7.4830 | 25.2302   | 28.0899   |
| 7.8220 | 23.8406   | 30.5673   |
| 8.1610 | 30.0195   | 30.8438   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 624.267     |
| 6.4660 | 627.507     |
| 6.8050 | 632.206     |
| 7.1440 | 633.209     |
| 7.4830 | 643.221     |
| 7.8220 | 648.220     |
| 8.1610 | 660.109     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | 1.690 |
| 7.1440 | 1.879 |
| 6.4660 | 2.661 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 10.6028  |
| -8.0010 | 10.3194  |
| -7.7510 | 11.9626  |
| -7.5010 | 13.6846  |
| -7.2510 | 15.5307  |
| -7.0010 | 17.3541  |
| -6.7510 | 19.1849  |
| -6.5010 | 19.8527  |
| -6.2510 | 20.8429  |
| -6.0010 | 21.0943  |
| -5.7510 | 22.3872  |
| -2.5674 | 22.2863  |
| -.5190  | 22.2863  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 21.9166  |
| -.5080  | 21.9166  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST.<br>FACTOR | MID ADD.<br>DEVIATION | DIST.<br>FACTOR | FRAC. TO<br>BLOCKAGE |
|---------|----------|-----------------|-----------------------|-----------------|----------------------|
| 1       | 0.0000   | 1.0000          | -0.000                | -0.000          | -0.000               |
| 2       | 0.0000   | 1.0000          | -0.000                | -0.000          | -0.000               |
| 3       | 0.0000   | 1.0000          | -0.000                | -0.000          | -0.000               |
| 4       | 0.0000   | 1.0000          | -0.000                | -0.000          | -0.000               |
| 5       | 0.0000   | 1.0000          | -0.000                | -0.000          | -0.000               |
| 6       | 0.0000   | 1.0000          | -0.000                | -0.000          | -0.000               |
| 7       | 0.0000   | 1.0000          | -0.000                | -0.000          | -0.000               |
| 8       | .1000    | .5000           | -0.000                | -0.000          | -0.000               |
| 9       | 0.0000   | .5000           | -0.000                | -0.000          | -0.000               |
| 10      | 0.0000   | .5000           | -0.000                | -0.000          | -0.000               |
| 11      | .0500    | 1.0000          | -0.000                | -0.000          | -0.000               |
| 12      | .0500    | 1.0000          | -0.000                | -0.000          | -0.000               |
| 13      | .0500    | 1.0000          | -0.000                | -0.000          | -0.000               |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NYACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |

NJUMP= 0



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100% SPEEDLINE PHASE II INPUT DATA



PROGRAM W00200 - AXIAL COMPRESSOR TEST DATA ANALYSIS  
FIXED DATA PRINTOUT

MFC CONFIGURATION #1, 100% SPEED, ACROSS-BLADE ANALYSIS 23MAR76

13  
= 21  
= 20  
= 20  
= 10  
= 12  
= 20  
= 30  
= 60  
=

NUMBER OF STATIONS  
NUMBER OF STAGES  
NUMBER OF REVERSALS  
MAXIMUM NUMBER OF ITERATIONS  
MAXIMUM NUMBER OF ARBITRARY ITERATIONS  
TOTAL PRESSURE SOURCE INDICATOR  
TOTAL TEMPERATURE SOURCE INDICATOR  
STATION NUMBER FOR STAGE  
STATION NUMBER FOR STAGE  
NUMBER OF STATOR BLADES  
NUMBER OF STATOR BLADES  
MAXIMUM NUMBER OF LINES PER PAGE  
NPLOT

ANNULUS SPECIFICATION

STATION 1 SPECIFIED BY 2 POINTS

RSTH XSTH  
0.3000 -16.2000  
13.3000 -18.6500

STATION 2 SPECIFIED BY 2 POINTS

RSTH XSTH  
0.0000 -14.9000  
9.4000 -14.9800

STATION 3 SPECIFIED BY 2 POINTS

RSTH XSTH  
0.0000 -10.3000  
8.9000 -12.9500

STATION 4 SPECIFIED BY 2 POINTS

RSTH XSTH  
1.5000 -9.7000  
6.5000 -11.1000

STATION 5 SPECIFIED BY 2 POINTS

RSTH XSTH  
2.0500 -9.1000  
6.5000 -9.6000

STATION 6 SPECIFIED BY 2 POINTS

RSTH XSTH  
2.3000 -8.5000  
6.5000 -8.6000

STATION 7 SPECIFIED BY 5 POINTS

RSTH XSTH  
2.6000 -8.1000  
3.6000 -8.2000  
5.0500 -8.2500  
6.3000 -7.9000  
8.5000 -7.4000



STATION 8 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 7.0312 | -5.3120 |
| 7.0310 | -2.4330 |
| 7.0310 | -2.2230 |
| 7.0310 | -2.1341 |
| 7.0312 | -2.1117 |
| 7.0312 | -2.2702 |
| 7.0312 | -2.3703 |
| 7.0312 | -2.7113 |
| 7.0312 | -2.7449 |

STATION 9 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 4.2537 | -2.1720 |
| 5.2330 | -2.0953 |
| 5.2330 | -2.1220 |
| 5.2333 | -2.3500 |

STATION 10 SPECIFIED BY 4 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 7.0315 | -5.1220 |
| 7.0310 | -2.7750 |
| 7.0310 | -2.0300 |
| 7.0310 | -2.0300 |

STATION 11 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.0314 | -2.7343 |
| 6.0310 | -2.2174 |

STATION 12 SPECIFIED BY 2 POINTS

| RSTN   | XSTN    |
|--------|---------|
| 5.7315 | -2.1220 |
| 5.5310 | -1.0200 |

STATION 13 SPECIFIED BY 2 POINTS

| RSTN   | XSTN   |
|--------|--------|
| 2.2206 | 0.2349 |
| 3.5310 | 0.0300 |

STATION CALCULATION, SPECIFICATION AND BLADING DATA

| STATION | SCALE     | DATA      | HBL      |
|---------|-----------|-----------|----------|
| 2       | SCALE = 1 | DATA = -1 | HBL = -0 |
| 3       | SCALE = 1 | DATA = -1 | HBL = -0 |
| 4       | SCALE = 1 | DATA = -1 | HBL = -0 |
| 5       | SCALE = 1 | DATA = -1 | HBL = -0 |
| 6       | SCALE = 1 | DATA = -1 | HBL = -0 |







ROTOR GENERALIZED PERFORMANCE      LOSS   2PTS      DEVIATION   2PTS

    M-CJ0R0    LOSS COEFF/TOTAL LOSS COEFF

        0.0000      0.0000  
        1.0000      1.0000

OUTLET RADIUS = 0.0030

    M-CJ0R0    DEVIATION ANGLE (DEGREES)

        0.0000      0.0000  
        1.0000      1.0000

STATOR GENERALIZED PERFORMANCE      LOSS   2PTS      DEVIATION   2PTS

    M-CJ0R0    LOSS COEFF/TOTAL LOSS COEFF

        0.0000      0.0000  
        1.0000      1.0000

OUTLET RADIUS = 0.0030

    M-CJ0R0    DEVIATION ANGLE (DEGREES)

        0.0000      0.0000  
        1.0000      1.0000

NUMBER OF TEST POINTS TO BE ANALYSED = 9

PSCALE= 0.00 PLOWR= 0.00 DAMPF= 7.000 NSAVE= 1

WMAX= 0 WFORCE= 0 NEX= 2



# TEST DATA PRINTOUT FOR POINT NO. 1

## TEST POINT TITLE

GAS CONSTANT  
AIR MASS FRACTION  
FLOW RATE  
MOTOR SPEED  
INLET TOTAL PRESSURE  
INLET TOTAL TEMPERATURE  
INLET INLET  
P INLET INLET

601160200000  
53.4535  
59661  
1.186  
62173.1  
20.6944  
5.184700  
5.94301  
+.85249

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 2.1250 | 20.2023  |
| 3.1250 | 20.2023  |
| 4.1250 | 20.2023  |
| 5.1250 | 20.2023  |
| 6.1250 | 20.2023  |
| 7.1250 | 20.2023  |
| 8.1250 | 20.2023  |
| 9.1250 | 20.2023  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 2.1250 | 612.112     |
| 3.1250 | 612.112     |
| 4.1250 | 612.112     |
| 5.1250 | 612.112     |
| 6.1250 | 612.112     |
| 7.1250 | 612.112     |
| 8.1250 | 612.112     |
| 9.1250 | 612.112     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 0.1250 | 20.2023   | 20.2023   |
| 1.1250 | 20.2023   | 20.2023   |
| 2.1250 | 20.2023   | 20.2023   |
| 3.1250 | 20.2023   | 20.2023   |
| 4.1250 | 20.2023   | 20.2023   |
| 5.1250 | 20.2023   | 20.2023   |
| 6.1250 | 20.2023   | 20.2023   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.1250 | 612.112     |
| 1.1250 | 612.112     |
| 2.1250 | 612.112     |
| 3.1250 | 612.112     |
| 4.1250 | 612.112     |
| 5.1250 | 612.112     |
| 6.1250 | 612.112     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 1.1250 | 2.144 |
| 2.1250 | 2.144 |
| 3.1250 | 2.144 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 10.0334  |
| -8.0010 | 19.7209  |
| -7.7510 | 10.2582  |
| -7.2510 | 10.9507  |
| -7.0010 | 11.7377  |
| -6.7510 | 13.0127  |
| -6.5010 | 15.5366  |
| -6.2510 | 17.4907  |
| -6.0010 | 19.6110  |
| -5.7510 | 19.0111  |
| -5.5010 | 20.3428  |
| -5.2510 | 21.3786  |
| -5.0010 | 21.3786  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.4439 | 20.3314  |
| -1.5088 | 20.9314  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADJ. DEVIATION | DIST. FACTOR | FRAC. ICE BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|--------------------|
| 1       | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |
| 2       | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |
| 3       | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |
| 4       | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |
| 5       | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |
| 6       | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |
| 7       | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |
| 8       | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |
| 9       | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |
| 10      | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |
| 11      | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |
| 12      | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |
| 13      | 0.0000   | 1.0000       | -0.000              | 0.0000       | -0.0000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |
| NJUMP   | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



# TEST DATA PRINTOUT FOR POINT NO. 2

## TEST POINT TITLE

GAS CONSTANT  
AIR GAZES FRACTION  
FLOW RATE  
OUTLET FLOW  
INLET TOTAL PRESSURE  
INLET TOTAL TEMPERATURE  
P IN/P IN(STD)

= 601160+00200  
= 53.7419  
= 52.99717  
= 20178.0  
= 51.86703  
= .85395

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 29.1461  |
| 5.5000 | 28.3070  |
| 5.8750 | 23.5255  |
| 6.2500 | 23.5852  |
| 6.6250 | 30.0285  |
| 7.0000 | 21.0347  |
| 7.3750 | 31.0890  |
| 7.7500 | 31.5861  |
| 8.1250 | 23.6643  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 632.162     |
| 5.5000 | 633.713     |
| 5.8750 | 640.363     |
| 6.2500 | 637.969     |
| 6.6250 | 634.653     |
| 7.0000 | 649.623     |
| 7.3750 | 652.977     |
| 7.7500 | 657.817     |
| 8.1250 | 676.024     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 23.7535   | 29.7913   |
| 6.4660 | 23.3705   | 23.5766   |
| 6.8050 | 23.1953   | 30.0518   |
| 7.1440 | 23.0232   | 30.5436   |
| 7.4830 | 30.1833   | 31.0032   |
| 7.8220 | 30.5176   | 31.0972   |
| 8.1610 | 30.2460   | 31.1972   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 632.453     |
| 6.4660 | 635.293     |
| 6.8050 | 637.337     |
| 7.1440 | 643.302     |
| 7.4830 | 651.223     |
| 7.8220 | 661.273     |
| 8.1610 | 667.603     |

## STAGE OUTLET FLOW ANGLE ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | 1.323 |
| 7.1440 | 1.032 |
| 6.4660 | 3.461 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 10.1109  |
| -8.0010 | 9.7466   |
| -7.7510 | 10.5258  |
| -7.5010 | 11.3039  |
| -7.2510 | 13.5791  |
| -7.0010 | 15.4189  |
| -6.7510 | 17.4238  |
| -6.5010 | 19.0250  |
| -6.2510 | 19.9357  |
| -6.0010 | 20.2391  |
| -5.7510 | 21.7643  |
| -2.5674 | 22.5902  |
| -1.5190 | 22.5902  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8439 | 22.1652  |
| -1.5080 | 22.1652  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADJ. DEVIATION | DIST. FACTOR | FRAC. T. BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | .1000    | .5000        | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | .5000        | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | .5000        | -0.000             | -0.000       | -0.000            |
| 11      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 1

TEST POINT TITLE  
 GAS CONSTANT  
 FLOW RATE  
 ROTOR INLET PRESSURE  
 INLET TOTAL PRESSURE  
 P IN/P IN(STD)

691220101000  
 53.4192  
 62.9881  
 20174.4  
 14.6944  
 193120  
 .86158

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)  
 RADIUS  
 PRESSURE  
 29.1274  
 29.1274  
 29.1274  
 29.1274  
 29.1274  
 29.1274  
 29.1274  
 29.1274  
 29.1274

ROTOR OUTLET TOTAL TEMPERATURE ( 3 POINTS)  
 RADIUS  
 TEMPERATURE  
 5.1200  
 5.1200  
 5.1200  
 5.1200  
 5.1200  
 5.1200  
 5.1200  
 5.1200  
 5.1200

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)  
 RADIUS  
 MEAN PRES  
 PEAK PRES  
 6.1200  
 6.1200  
 6.1200  
 6.1200  
 6.1200  
 6.1200  
 6.1200

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)  
 RADIUS  
 TEMPERATURE  
 6.1200  
 6.1200  
 6.1200  
 6.1200  
 6.1200  
 6.1200  
 6.1200

STAGE INLET FLOW ANGLES ( 3 POINTS)  
 RADIUS  
 ANGLE  
 7.1200  
 7.1200  
 7.1200



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 10.1214  
 -8.0010 19.7825  
 -7.7510 10.6161  
 -7.5010 11.6368  
 -7.2510 14.1394  
 -7.0010 15.6594  
 -6.7510 18.1912  
 -6.5010 19.3583  
 -6.2510 20.2584  
 -6.0010 22.0492  
 -5.7510 22.6183  
 -5.5010 22.8183

# HUB STATIC PRESSURES ( 2 POINTS)

Y-COORD PRESSURE

-2.8433 22.4063  
 -.5030 22.4063

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. DEVIATION | DIST. FACTOR | FRAC. TIME BLOCKAGE |
|---------|----------|--------------|----------------|--------------|---------------------|
| 1       | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |
| 2       | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |
| 3       | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |
| 4       | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |
| 5       | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |
| 6       | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |
| 7       | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |
| 8       | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |
| 9       | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |
| 10      | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |
| 11      | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |
| 12      | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |
| 13      | 0.0000   | 1.0000       | 0.000          | 0.0000       | 0.0000              |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NHACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 1

TEST POINT TITLE

AIR CONSTANT  
 FLOW RATE  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN(STD)

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 29.3572  |
| 5.1250 | 29.3572  |
| 5.1250 | 29.3572  |
| 5.1250 | 29.3572  |
| 5.1250 | 29.3572  |
| 5.1250 | 29.3572  |
| 5.1250 | 29.3572  |
| 5.1250 | 29.3572  |
| 5.1250 | 29.3572  |

ROTOR OUTLET TOTAL TEMPERATURE ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 611.571     |
| 5.1250 | 611.571     |
| 5.1250 | 611.571     |
| 5.1250 | 611.571     |
| 5.1250 | 611.571     |
| 5.1250 | 611.571     |
| 5.1250 | 611.571     |
| 5.1250 | 611.571     |
| 5.1250 | 611.571     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 5.1270 | 28.6257   | 29.4395   |
| 5.1270 | 28.6257   | 29.4395   |
| 5.1270 | 28.6257   | 29.4395   |
| 5.1270 | 28.6257   | 29.4395   |
| 5.1270 | 28.6257   | 29.4395   |
| 5.1270 | 28.6257   | 29.4395   |
| 5.1270 | 28.6257   | 29.4395   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1270 | 611.077     |
| 5.1270 | 611.077     |
| 5.1270 | 611.077     |
| 5.1270 | 611.077     |
| 5.1270 | 611.077     |
| 5.1270 | 611.077     |
| 5.1270 | 611.077     |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 5.1270 | 1.615 |
| 5.1270 | 1.615 |
| 5.1270 | 1.615 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 19.1438  
 -8.0010 19.3209  
 -7.7510 12.3902  
 -7.2510 14.8189  
 -7.0010 19.3377  
 -6.7510 19.0030  
 -6.5010 19.3355  
 -6.2510 20.9044  
 -5.0010 22.1756  
 -5.7510 22.1709  
 -5.5010 23.2521  
 -5.2510 23.2551

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8+39 22.3513  
 -.5030 22.3572

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID. ADD. DEVIATION | DIST. FACTOR | FRAC. IE BLOCKAGE |
|---------|----------|--------------|---------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |
| 2       | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |
| 3       | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |
| 4       | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |
| 5       | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |
| 6       | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |
| 7       | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |
| 8       | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |
| 9       | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |
| 10      | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |
| 11      | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |
| 12      | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |
| 13      | 0.0000   | 1.0000       | -0.000              | -0.000       | 0.0000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



# TEST DATA PRINTOUT FOR POINT NO. 5

TEST POINT TITLE  
 = 602200201900  
 = 53.4842  
 = 62.6222  
 = 20.143708  
 = 51.85590  
 = 0.0468

SAZ CONSTANT  
 ROTOR FRACTION  
 ROTOR TOTAL PRESSURE  
 INLET TOTAL PRESSURE  
 INLET TOTAL PRESSURE  
 INLET TOTAL PRESSURE

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.120  | 20.1437     |
| 0.140  | 20.1437     |
| 0.160  | 20.1437     |
| 0.180  | 20.1437     |
| 0.200  | 20.1437     |
| 0.220  | 20.1437     |
| 0.240  | 20.1437     |
| 0.260  | 20.1437     |
| 0.280  | 20.1437     |
| 0.300  | 20.1437     |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.120  | 61.1522     |
| 0.140  | 61.1522     |
| 0.160  | 61.1522     |
| 0.180  | 61.1522     |
| 0.200  | 61.1522     |
| 0.220  | 61.1522     |
| 0.240  | 61.1522     |
| 0.260  | 61.1522     |
| 0.280  | 61.1522     |
| 0.300  | 61.1522     |

## STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | TEMPERATURE | PEAK PRES |
|--------|-------------|-----------|
| 0.120  | 20.1437     | 20.1437   |
| 0.140  | 20.1437     | 20.1437   |
| 0.160  | 20.1437     | 20.1437   |
| 0.180  | 20.1437     | 20.1437   |
| 0.200  | 20.1437     | 20.1437   |
| 0.220  | 20.1437     | 20.1437   |
| 0.240  | 20.1437     | 20.1437   |

## STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.120  | 61.1522     |
| 0.140  | 61.1522     |
| 0.160  | 61.1522     |
| 0.180  | 61.1522     |
| 0.200  | 61.1522     |
| 0.220  | 61.1522     |
| 0.240  | 61.1522     |

## STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 0.120  | 1.340 |
| 0.140  | 1.340 |
| 0.160  | 1.340 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7519 | 10.1669  |
| -8.0010 | 19.8351  |
| -7.7510 | 10.9085  |
| -7.5010 | 12.9128  |
| -7.2510 | 15.1570  |
| -7.0010 | 16.8273  |
| -6.7510 | 19.2816  |
| -6.5010 | 20.1347  |
| -6.2510 | 21.2440  |
| -6.0010 | 21.4637  |
| -5.7510 | 22.9903  |
| -5.5010 | 23.4485  |
| -5.2510 | 23.4485  |
| -5.0010 | 23.4485  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 23.1063  |
| -2.5080 | 23.1063  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NMACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |
| NJUMP   | 0 |    |    |    |    |    |    |    |    |    |    |    |    |



# TEST DATA PRINTOUT FOR POINT NO. 3

TEST POINT TITLE  
 601220932303  
 53.4303  
 53.4303  
 53.4303  
 53.4303  
 53.4303  
 53.4303

TEST POINT TITLE  
 601220932303  
 53.4303  
 53.4303  
 53.4303  
 53.4303  
 53.4303  
 53.4303

## ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 0.1250 | 53.4303  |
| 0.1250 | 53.4303  |
| 0.1250 | 53.4303  |
| 0.1250 | 53.4303  |
| 0.1250 | 53.4303  |
| 0.1250 | 53.4303  |
| 0.1250 | 53.4303  |
| 0.1250 | 53.4303  |
| 0.1250 | 53.4303  |

## ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMP. (K) |
|--------|-----------|
| 0.1250 | 53.4303   |
| 0.1250 | 53.4303   |
| 0.1250 | 53.4303   |
| 0.1250 | 53.4303   |
| 0.1250 | 53.4303   |
| 0.1250 | 53.4303   |
| 0.1250 | 53.4303   |
| 0.1250 | 53.4303   |
| 0.1250 | 53.4303   |

## STAGE OUTLET TOTAL PRESSURE ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 0.1250 | 53.4303   | 53.4303   |
| 0.1250 | 53.4303   | 53.4303   |
| 0.1250 | 53.4303   | 53.4303   |
| 0.1250 | 53.4303   | 53.4303   |
| 0.1250 | 53.4303   | 53.4303   |
| 0.1250 | 53.4303   | 53.4303   |
| 0.1250 | 53.4303   | 53.4303   |

## STAGE OUTLET TOTAL TEMPERATURE ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.1250 | 53.4303     |
| 0.1250 | 53.4303     |
| 0.1250 | 53.4303     |
| 0.1250 | 53.4303     |
| 0.1250 | 53.4303     |
| 0.1250 | 53.4303     |
| 0.1250 | 53.4303     |

## STAGE OUTLET FLOW ANGLES ( 1 POINTS)

| RADIUS | ANGLE   |
|--------|---------|
| 0.1250 | 53.4303 |
| 0.1250 | 53.4303 |
| 0.1250 | 53.4303 |
| 0.1250 | 53.4303 |
| 0.1250 | 53.4303 |
| 0.1250 | 53.4303 |
| 0.1250 | 53.4303 |



# CASING STATIC PRESSURES (13 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -8.7510 | 10.2117  |
| -8.0010 | 9.8991   |
| -7.7510 | 11.4183  |
| -7.5010 | 13.5908  |
| -7.2510 | 15.6827  |
| -7.0010 | 17.8002  |
| -6.7510 | 19.7726  |
| -6.5010 | 20.5084  |
| -6.2510 | 21.6238  |
| -6.0010 | 21.7869  |
| -5.7510 | 23.3354  |
| -2.5674 | 23.6983  |
| -.5190  | 23.6983  |

# HUB STATIC PRESSURES ( 2 POINTS)

| X-COORD | PRESSURE |
|---------|----------|
| -2.8499 | 23.3170  |
| -.5080  | 23.3169  |

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.000       | -0.000            |
| 8       | .1000    | .5000        | -0.000             | -0.000       | -0.000            |
| 9       | 0.0000   | .5000        | -0.000             | -0.000       | -0.000            |
| 10      | 0.0000   | .5000        | -0.000             | -0.000       | -0.000            |
| 11      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000            |
| 12      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000            |
| 13      | .0500    | 1.0000       | -0.000             | -0.000       | -0.000            |

# SOLUTION TYPE INDICATORS

| STATION | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 |
|---------|---|----|----|----|----|----|----|----|----|----|----|----|----|
| NHACH   | 0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | -0 | 0  |

NJUMP= 0



|       |              |
|-------|--------------|
| =     | 6012211J26J3 |
| ===== | 957212314    |
|       | 123123456    |
|       | 999999999    |
|       | 3.9143.914   |
|       | 5.6245.      |
|       | 12345.       |

3711 141C-1572

CAS FLOW TOTAL  
CUMULATIVE FLOW TOTAL  
CUMULATIVE FLOW TOTAL

(SINCE 4) 52055720 7101 171106 80102

[illegible]

REPORT TOTAL 1992240000 199019151

56-1072  
JUL 1962

STATION 2

[illegible]

STAGS GULF TOTAL 1-1963-1964 1965-1966 1967-1968 1969-1970 1971-1972 1973-1974 1975-1976 1977-1978 1979-1980 1981-1982 1983-1984 1985-1986 1987-1988 1989-1990 1991-1992 1993-1994 1995-1996 1997-1998 1999-2000 2001-2002 2003-2004 2005-2006 2007-2008 2009-2010 2011-2012 2013-2014 2015-2016 2017-2018 2019-2020 2021-2022 2023-2024 2025-2026 2027-2028 2029-2030 2031-2032 2033-2034 2035-2036 2037-2038 2039-2040 2041-2042 2043-2044 2045-2046 2047-2048 2049-2050 2051-2052 2053-2054 2055-2056 2057-2058 2059-2060 2061-2062 2063-2064 2065-2066 2067-2068 2069-2070 2071-2072 2073-2074 2075-2076 2077-2078 2079-2080 2081-2082 2083-2084 2085-2086 2087-2088 2089-2090 2091-2092 2093-2094 2095-2096 2097-2098 2099-2100 2101-2102 2103-2104 2105-2106 2107-2108 2109-2110 2111-2112 2113-2114 2115-2116 2117-2118 2119-2120 2121-2122 2123-2124 2125-2126 2127-2128 2129-2130 2131-2132 2133-2134 2135-2136 2137-2138 2139-2140 2141-2142 2143-2144 2145-2146 2147-2148 2149-2150 2151-2152 2153-2154 2155-2156 2157-2158 2159-2160 2161-2162 2163-2164 2165-2166 2167-2168 2169-2170 2171-2172 2173-2174 2175-2176 2177-2178 2179-2180 2181-2182 2183-2184 2185-2186 2187-2188 2189-2190 2191-2192 2193-2194 2195-2196 2197-2198 2199-2200 2201-2202 2203-2204 2205-2206 2207-2208 2209-2210 2211-2212 2213-2214 2215-2216 2217-2218 2219-2220 2221-2222 2223-2224 2225-2226 2227-2228 2229-2230 2231-2232 2233-2234 2235-2236 2237-2238 2239-2240 2241-2242 2243-2244 2245-2246 2247-2248 2249-2250 2251-2252 2253-2254 2255-2256 2257-2258 2259-2260 2261-2262 2263-2264 2265-2266 2267-2268 2269-2270 2271-2272 2273-2274 2275-2276 2277-2278 2279-2280 2281-2282 2283-2284 2285-2286 2287-2288 2289-2290 2291-2292 2293-2294 2295-2296 2297-2298 2299-2300 2301-2302 2303-2304 2305-2306 2307-2308 2309-2310 2311-2312 2313-2314 2315-2316 2317-2318 2319-2320 2321-2322 2323-2324 2325-2326 2327-2328 2329-2330 2331-2332 2333-2334 2335-2336 2337-2338 2339-2340 2341-2342 2343-2344 2345-2346 2347-2348 2349-2350 2351-2352 2353-2354 2355-2356 2357-2358 2359-2360 2361-2362 2363-2364 2365-2366 2367-2368 2369-2370 2371-2372 2373-2374 2375-2376 2377-2378 2379-2380 2381-2382 2383-2384 2385-2386 2387-2388 2389-2390 2391-2392 2393-2394 2395-2396 2397-2398 2399-2400 2401-2402 2403-2404 2405-2406 2407-2408 2409-2410 2411-2412 2413-2414 2415-2416 2417-2418 2419-2420 2421-2422 2423-2424 2425-2426 2427-2428 2429-2430 2431-2432 2433-2434 2435-2436 2437-2438 2439-2440 2441-2442 2443-2444 2445-2446 2447-2448 2449-2450 2451-2452 2453-2454 2455-2456 2457-2458 2459-2460 2461-2462 2463-2464 2465-2466 2467-2468 2469-2470 2471-2472 2473-2474 2475-2476 2477-2478 2479-2480 2481-2482 2483-2484 2485-2486 2487-2488 2489-2490 2491-2492 2493-2494 2495-2496 2497-2498 2499-2500 2501-2502 2503-2504 2505-2506 2507-2508 2509-2510 2511-2512 2513-2514 2515-2516 2517-2518 2519-2520 2521-2522 2523-2524 2525-2526 2527-2528 2529-2530 2531-2532 2533-2534 2535-2536 2537-2538 2539-2540 2541-2542 2543-2544 2545-2546 2547-2548 2549-2550 2551-2552 2553-2554 2555-2556 2557-2558 2559-2560 2561-2562 2563-2564 2565-2566 2567-2568 2569-2570 2571-2572 2573-2574 2575-2576 2577-2578 2579-2580 2581-2582 2583-2584 2585-2586 2587-2588 2589-2590 2591-2592 2593-2594 2595-2596 2597-2598 2599-2600 2601-2602 2603-2604 2605-2606 2607-2608 2609-2610 2611-2612 2613-2614 2615-2616 2617-2618 2619-2620 2621-2622 2623-2624 2625-2626 2627-2628 2629-2630 2631-2632 2633-2634 2635-2636 2637-2638 2639-2640 2641-2642 2643-2644 2645-2646 2647-2648 2649-2650 2651-2652 2653-2654 2655-2656 2657-2658 2659-2660 2661-2662 2663-2664 2665-2666 2667-2668 2669-2670 2671-2672 2673-2674 2675-2676 2677-2678 2679-2680 2681-2682 2683-2684 2685-2686 2687-2688 2689-2690 2691-2692 2693-2694 2695-2696 2697-2698 2699-2700 2701-2702 2703-2704 2705-2706 2707-2708 2709-2710 2711-2712 2713-2714 2715-2716 2717-2718 2719-2720 2721-2722 2723-2724 2725-2726 2727-2728 2729-2730 2731-2732 2733-2734 2735-2736 2737-2738 2739-2740 2741-2742 2743-2744 2745-2746 2747-2748 2749-2750 2751-2752 2753-2754 2755-2756 2757-2758 2759-2760 2761-2762 2763-2764 2765-2766 2767-2768 2769-2770 2771-2772 2773-2774 2775-2776 2777-2778 2779

66015 1-40-23112-

44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 106

STAGE 2911-1 FLO 4962-1 3 4914131

|         |         |
|---------|---------|
| 920155  | Aug 25  |
| 70.420  | 1.14.21 |
| 7.14.00 | 1.14.22 |
| 6.46.00 | 1.14.23 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510 10.3863  
 -8.0010 19.9380  
 -7.7510 12.9923  
 -7.5010 14.3139  
 -7.2510 16.0466  
 -7.0010 18.7871  
 -6.7510 20.0811  
 -6.5010 20.6675  
 -6.2510 21.6344  
 -6.0010 21.9064  
 -5.7510 23.5524  
 -5.5010 23.9106  
 -5.2510 23.9106

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8439 24.5205  
 -.5080 23.5205

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. TE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 6       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 7       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 8       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 10      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 11      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 12      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |
| 13      | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.0000           |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0

NJUMP= 0



TEST DATA PRINTOUT FOR POINT NO. 9

602200302700

53.99572  
12.1691  
20.1691  
31.96016  
86652

TEST POINT TITLE

CAS CONSTANT  
CUMULATIVE FRACTION  
FLOW NO. 100  
OUTLET TOTAL PRESSURE  
OUTLET TOTAL TEMPERATURE  
INLET INLET

MOTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 0.1250 | 1.135    |
| 0.1250 | 1.135    |
| 0.1250 | 1.135    |
| 0.1250 | 1.135    |
| 0.1250 | 1.135    |
| 0.1250 | 1.135    |
| 0.1250 | 1.135    |
| 0.1250 | 1.135    |
| 0.1250 | 1.135    |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.1250 | 1.135       |
| 0.1250 | 1.135       |
| 0.1250 | 1.135       |
| 0.1250 | 1.135       |
| 0.1250 | 1.135       |
| 0.1250 | 1.135       |
| 0.1250 | 1.135       |
| 0.1250 | 1.135       |
| 0.1250 | 1.135       |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 0.1270 | 1.135     | 1.135     |
| 0.1270 | 1.135     | 1.135     |
| 0.1270 | 1.135     | 1.135     |
| 0.1270 | 1.135     | 1.135     |
| 0.1270 | 1.135     | 1.135     |
| 0.1270 | 1.135     | 1.135     |
| 0.1270 | 1.135     | 1.135     |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 0.1270 | 1.135       |
| 0.1270 | 1.135       |
| 0.1270 | 1.135       |
| 0.1270 | 1.135       |
| 0.1270 | 1.135       |
| 0.1270 | 1.135       |
| 0.1270 | 1.135       |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 0.1270 | 1.135 |
| 0.1270 | 1.135 |
| 0.1270 | 1.135 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

8.7510 10.3046  
 -8.0010 19.8979  
 -7.7510 11.7691  
 -7.5010 14.0283  
 -7.2510 16.8189  
 -7.0010 18.5011  
 -6.7510 19.9380  
 -6.5010 20.5870  
 -6.2510 21.7605  
 -6.0010 21.8797  
 -5.7510 23.4350  
 -5.5010 23.7640  
 -5.2510 23.7640

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8499 23.4225  
 -.5080 23.4225

# DISTRIBUTED BLOCKAGE SPECIFICATION

| STATION | BLOCKAGE | DIST. FACTOR | MID ADD. DEVIATION | DIST. FACTOR | FRAC. IE BLOCKAGE |
|---------|----------|--------------|--------------------|--------------|-------------------|
| 1       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 2       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 3       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 4       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 5       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 6       | 0.0000   | 1.5000       | -0.000             | -0.0000      | -0.000            |
| 7       | 0.1000   | .5000        | -0.000             | -0.0000      | -0.000            |
| 8       | 0.0000   | .5000        | -0.000             | -0.0000      | -0.000            |
| 9       | 0.0000   | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 10      | .0500    | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 11      | .0500    | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 12      | .0500    | 1.0000       | -0.000             | -0.0000      | -0.000            |
| 13      | .0500    | 1.0000       | -0.000             | -0.0000      | -0.000            |

# SOLUTION TYPE INDICATORS

STATION 1 2 3 4 5 6 7 8 9 10 11 12 13  
 NMACH 0. -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0 -0  
 NJUMP 0



# TEST DATA PRINTOUT FOR POINT NO. 3

TEST POINT TITLE  
 GAS CONSTANT  
 FLOW RATE FRACTION  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN(SID)

TEST POINT TITLE  
 GAS CONSTANT  
 FLOW RATE FRACTION  
 ROTOR SPEED  
 INLET TOTAL PRESSURE  
 INLET TOTAL TEMPERATURE  
 P IN/P IN(SID)

ROTOR OUTLET TOTAL PRESSURE ( 9 POINTS)

| RADIUS | PRESSURE |
|--------|----------|
| 5.1250 | 29.3927  |
| 5.5000 | 29.7194  |
| 5.8750 | 30.1099  |
| 6.2500 | 31.0433  |
| 6.6250 | 31.0535  |
| 7.0000 | 32.2601  |
| 7.3750 | 33.1983  |
| 7.7500 | 32.8116  |
| 8.1250 |          |

ROTOR OUTLET TOTAL TEMPERATURE ( 9 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 5.1250 | 330.731     |
| 5.5000 | 336.821     |
| 5.8750 | 343.557     |
| 6.2500 | 344.317     |
| 6.6250 | 344.773     |
| 7.0000 | 349.397     |
| 7.3750 | 357.321     |
| 7.7500 | 373.985     |
| 8.1250 | 385.573     |

STAGE OUTLET TOTAL PRESSURES ( 7 POINTS)

| RADIUS | MEAN PRES | PEAK PRES |
|--------|-----------|-----------|
| 6.1270 | 28.6083   | 28.6202   |
| 6.4050 | 28.6711   | 28.6823   |
| 6.6830 | 28.7110   | 28.7251   |
| 6.9610 | 28.7110   | 28.7251   |
| 7.2390 | 28.7110   | 28.7251   |
| 7.5170 | 28.7110   | 28.7251   |
| 7.7950 | 28.7110   | 28.7251   |
| 8.0730 | 28.7110   | 28.7251   |

STAGE OUTLET TOTAL TEMPERATURES ( 7 POINTS)

| RADIUS | TEMPERATURE |
|--------|-------------|
| 6.1270 | 333.955     |
| 6.4050 | 337.963     |
| 6.6830 | 341.919     |
| 6.9610 | 348.637     |
| 7.2390 | 357.441     |
| 7.5170 | 371.120     |
| 7.7950 | 379.792     |
| 8.0730 |             |

STAGE OUTLET FLOW ANGLES ( 3 POINTS)

| RADIUS | ANGLE |
|--------|-------|
| 7.8220 | 1.121 |
| 7.1440 | 1.513 |
| 6.4660 | 1.784 |



# CASING STATIC PRESSURES (13 POINTS)

X-COORD PRESSURE

-8.7510  
 -8.0010  
 -7.7510  
 -7.5010  
 -7.2510  
 -7.0010  
 -6.7510  
 -6.5010  
 -6.2510  
 -6.0010  
 -5.7510  
 -5.5010  
 -5.2510  
 -5.0010  
 -4.7510  
 -4.5010  
 -4.2510  
 -4.0010  
 -3.7510  
 -3.5010  
 -3.2510  
 -3.0010  
 -2.7510  
 -2.5010  
 -2.2510  
 -2.0010  
 -1.7510  
 -1.5010  
 -1.2510  
 -1.0010  
 -0.7510  
 -0.5010  
 -0.2510  
 -0.0010  
 0.2510  
 0.5010  
 0.7510  
 1.0010  
 1.2510  
 1.5010  
 1.7510  
 2.0010  
 2.2510  
 2.5010  
 2.7510  
 3.0010  
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 9.0010  
 9.2510  
 9.5010  
 9.7510  
 10.0010  
 10.2510  
 10.5010  
 10.7510  
 11.0010  
 11.2510  
 11.5010  
 11.7510  
 12.0010  
 12.2510  
 12.5010  
 12.7510  
 13.0010

# HUB STATIC PRESSURES ( 2 POINTS)

X-COORD PRESSURE

-2.8439  
 -2.5039  
 -2.1639  
 -1.8239  
 -1.4839  
 -1.1439  
 -0.8039  
 -0.4639  
 -0.1239  
 0.2161  
 0.5561  
 0.8961  
 1.2361  
 1.5761  
 1.9161  
 2.2561  
 2.5961  
 2.9361  
 3.2761  
 3.6161  
 3.9561  
 4.2961  
 4.6361  
 4.9761  
 5.3161  
 5.6561  
 5.9961  
 6.3361  
 6.6761  
 7.0161  
 7.3561  
 7.6961  
 8.0361  
 8.3761  
 8.7161  
 9.0561  
 9.3961  
 9.7361  
 10.0761  
 10.4161  
 10.7561  
 11.0961  
 11.4361  
 11.7761  
 12.1161  
 12.4561  
 12.7961  
 13.1361  
 13.4761  
 13.8161  
 14.1561  
 14.4961  
 14.8361  
 15.1761  
 15.5161  
 15.8561  
 16.1961  
 16.5361  
 16.8761  
 17.2161  
 17.5561  
 17.8961  
 18.2361  
 18.5761  
 18.9161  
 19.2561  
 19.5961  
 19.9361  
 20.2761  
 20.6161  
 20.9561  
 21.2961  
 21.6361  
 21.9761  
 22.3161  
 22.6561  
 22.9961  
 23.3361  
 23.6761  
 24.0161  
 24.3561  
 24.6961  
 25.0361  
 25.3761  
 25.7161  
 26.0561  
 26.3961  
 26.7361  
 27.0761  
 27.4161  
 27.7561  
 28.0961  
 28.4361  
 28.7761  
 29.1161  
 29.4561  
 29.7961  
 30.1361  
 30.4761  
 30.8161  
 31.1561  
 31.4961  
 31.8361  
 32.1761  
 32.5161  
 32.8561  
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